



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

~ 2012 ACEC/NM Award Winner for Engineering Excellence ~
~ 2008 ACEC/NM Award Winner for Engineering Excellence ~

June 11, 2012

Mr. Tariq Makhdoom, Ph.D., CFM
Care of FEMA LOMC Clearinghouse
7390 Coca Cola Drive, Suite 204
Hanover MD 21076

Re: Case No.: 12 06-1889P - LOMR Request for Cedar Ridge Estates Unit 2, Block F, Lots 14, 15, 16 and 17

Dear Mr. Makhdoom,

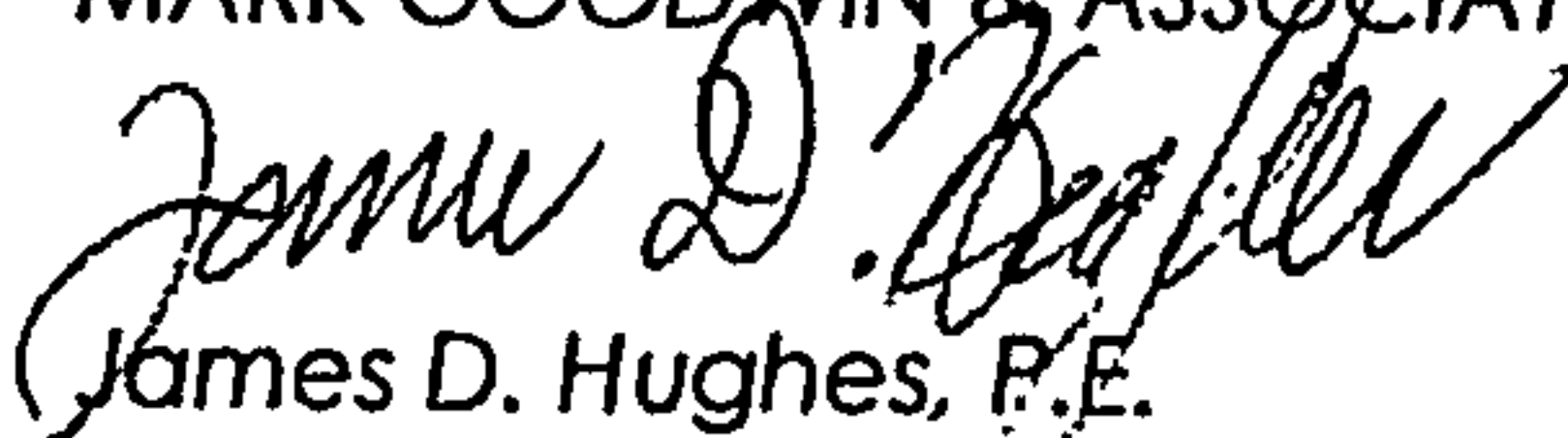
The purpose of this letter is to provide a brief Project Summary per your request on June 5, 2012. This LOMR Request is to remove an "A" zone from the referenced property. The basis for the request is two physical changes; 1) the construction of the West Mesa Diversion Storm Sewer, and 2) Fill placed on the lots to elevate them above the potential source of flooding, Los Volcanes Road.

A temporary retention pond was constructed on the requestor's property to contain a shallow playa that existed before Cedar Ridge Subdivision was developed in 1998. The storm drain constructed in 2005 diverted the drainage, so the pond was filled in 2008.

Please see the Design Analysis Report and As-built Construction Plans of the West Mesa Diversion Storm Sewer which shows that the flooding is now contained in the pipe in Los Volcanes Road located south of the requestor's property. Also, please see the Topographic Survey from January 2012 by Aldrich Land Surveying and note the survey shows the site is higher than surrounding terrain and does not receive any drainage from offsite.

I hope that this helps reviewers understand this request better. If you have any questions, please feel free to contact our office.

Sincerely,
MARK GOODWIN & ASSOCIATES, P.A.


James D. Hughes, P.E.
Senior Engineer

JDH/kb
XC: Curtis Cherne Albuquerque Flood Plain Administrator
Rhett Waterman, Waterman Inc.

Attachment

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Cedar Ridge Estates, Unit 2, Lots 14, 15, 16, & 17 ZONE MAP/DRG. FILE # J-10 / 10018
DRB#: 05-DRB00871, 05-DRB1007 EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Cedar Ridge Estates, Unit 2, Lots 14, 15, 16, & 17
CITY ADDRESS: 6716 Silkwood Ave. Albuquerque, NM 87121

ENGINEERING FIRM: Mark Goodwin & Associates, P.A.
ADDRESS: PO BOX 90606
CITY, STATE: Albuquerque, NM

CONTACT: James D. Hughes
PHONE: (505) 828-2200
ZIP CODE: 87199

OWNER: Waterman Inc.
ADDRESS: PO BOX 1005
CITY, STATE: Albuquerque, NM

CONTACT: Rhett Waterman
PHONE: (505) 898-0941
ZIP CODE: 87184

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: ALS, Inc.
ADDRESS: PO Box 30701
CITY, STATE: Albuquerque, NM

CONTACT: Tim Aldrich
PHONE: (505) 884-1990
ZIP CODE: 87190

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

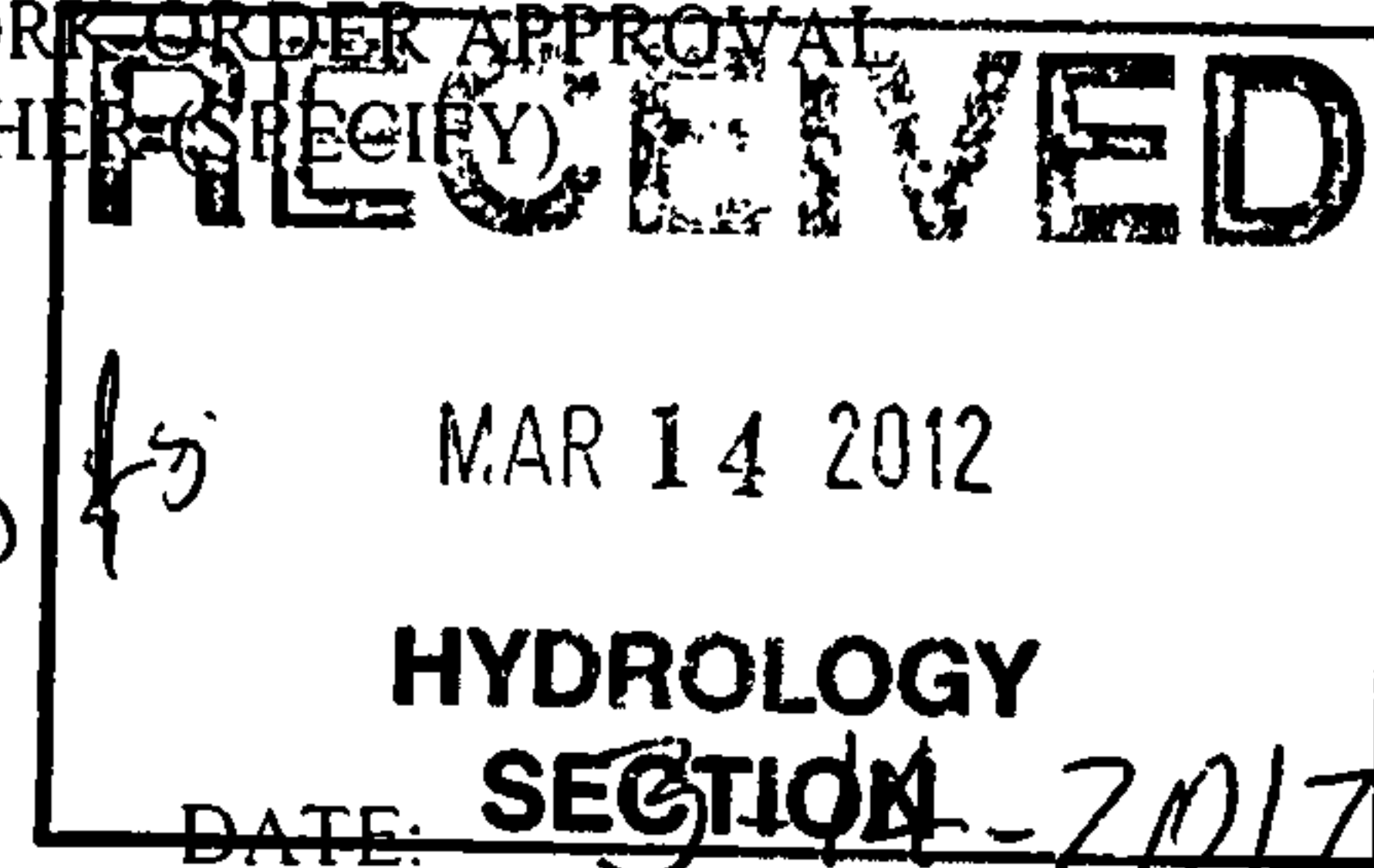
CONTACT: _____
PHONE: _____
ZIP CODE: _____

TYPE OF SUBMITTAL:
☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☒ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☐ ENGINEER/ARCHITECT CERT (TCL)
☐ ENGINEER/ARCHITECT (DRB SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TEMP)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY) _____

WAS A PRE-DESIGN CONFERENCE ATTENDED:
☐ YES
☐ NO
☐ COPY PROVIDED

SUBMITTED BY: James D. Hughes, P.E.



Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.



Federal Emergency Management Agency

Washington, D.C. 20472

July 18, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Richard J. Berry
Mayor, City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

IN REPLY REFER TO:

Case No.: 12-06-1889P
Community Name: City of Albuquerque, NM
Community No.: 350002
Effective Date of
This Revision: **November 29, 2012**

Dear Mayor Berry:

The Flood Insurance Rate Map for your community has been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denton, Texas, at (940) 898-5127, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

Sincerely,

Stuart W. Rooney, CFM, PMP, Program Specialist
Engineering Management Branch
Federal Insurance and Mitigation Administration

For: Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map

cc: Mr. Curtis Cherne, P.E., CFM
Principal Engineer/Floodplain Administrator
City of Albuquerque, New Mexico

Mr. James D. Hughes
Mark Goodwin & Associates, P.A.



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Albuquerque Bernalillo County New Mexico	FILL	HYDROLOGIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 350002		
IDENTIFIER	Cedar Ridge Estates, Unit 2, Lots 14 15 16 & 17	APPROXIMATE LATITUDE AND LONGITUDE: 35.091, -106.715 SOURCE: Precision Mapping Streets DATUM: NAD 83	
ANNOTATED MAPPING ENCLOSURES		ANNOTATED STUDY ENCLOSURES	
TYPE: FIRM* NO.: 35001C0329H DATE: August 16, 2012		NO REVISION TO THE FLOOD INSURANCE STUDY REPORT	

Enclosures reflect changes to flooding sources affected by this revision.
RM - Flood Insurance Rate Map

FLOODING SOURCE AND REVISED REACH

Unnamed Zone A - Bounded by Silkwood Avenue to the north, Los Volcanes Road to the south, and west of Rosebud Drive.

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Unnamed Zone A	Zone A	Zone X (unshaded)	NONE	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.


Stuart W. Rooney, CFM, PMP, Program Specialist
Engineering Management Branch
Federal Insurance and Mitigation Administration

12-06-1889P

102-D-A



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance discharges computed in the submitted hydrologic model. Future development of projects upstream could cause increased discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and could, therefore, indicate that greater flood hazards exist in this area.

ur community must regulate all proposed floodplain development and ensure that any permits required by Federal or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This revision has met our criteria for removing an area from the 1-percent-annual-chance floodplain to reflect the placement of fill. However, we encourage you to require that the lowest adjacent grade and lowest floor (including basement) of any structure placed within the subject area be elevated to or above the Base (1-percent-annual-chance) Flood Elevation.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

Stuart W. Rooney, CFM, PMP, Program Specialist
Engineering Management Branch
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Frank Pagano
Director, Mitigation Division
Federal Emergency Management Agency, Region VI
Federal Regional Center, Room 206
800 North Loop 288
Denton, TX 76209
(940) 898-5127

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

A handwritten signature in black ink, appearing to read "Stuart W. Rooney".

Stuart W. Rooney, CFM, PMP, Program Specialist
Engineering Management Branch
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

A notice of changes will be published in the *Federal Register*. A short notice will also be published in your local newspaper on or about the dates listed below. Please refer to FEMA's Web site at https://www/floodmaps.fema.gov/fhm/Scripts/bfe_main.asp

LOCAL NEWSPAPER

Name: *The Albuquerque Journal*

Dates: 07/25/2012 and 08/01/2012

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data.

Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at [p://www.fema.gov/business/nfip](http://www.fema.gov/business/nfip).

A handwritten signature in black ink, appearing to read "Stuart W. Rooney".

Stuart W. Rooney, CFM, PMP, Program Specialist
Engineering Management Branch
Federal Insurance and Mitigation Administration

106°43'07.5"
35°05'37.5"

JOINS PANEL 0327



MAP LEG

- 1% annual chance
(100-Year) Floodplain
- 1% annual chance
(100-Year) Floodway
- 0.2% annual chance
(500-Year) Floodplain



MAP SCALE 1" = 500'



NFIP

PANEL 0329H

FIRM

FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO
AND INCORPORATED AREAS

PANEL 329 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	COMMUNITY	NUMBER	PANEL	SUFFIX
	ALBUQUERQUE, CITY OF	350002	0329	H
	BERNALILLO COUNTY			
	UNINCORPORATED AREAS	350001	0329	H

REVISED TO
REFLECT LOMR

EFFECTIVE: November 29, 2012

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
35001C0329H

MAP REVISED
AUGUST 16, 2012

Federal Emergency Management Agency



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

~ 2012 ACEC/NM Award Winner for Engineering Excellence ~
~ 2008 ACEC/NM Award Winner for Engineering Excellence ~

May 23, 2012

Mr. Tariq Makhdoom, Ph.D., CFM
Care of FEMA LOMC Clearinghouse
7390 Coca Cola Drive, Suite 204
Hanover MD 21076

Re: Case No.: 12 06-1889P - LOMR Request for Cedar Ridge Estates Unit 2, Block F, Lots 14, 15, 16 and 17

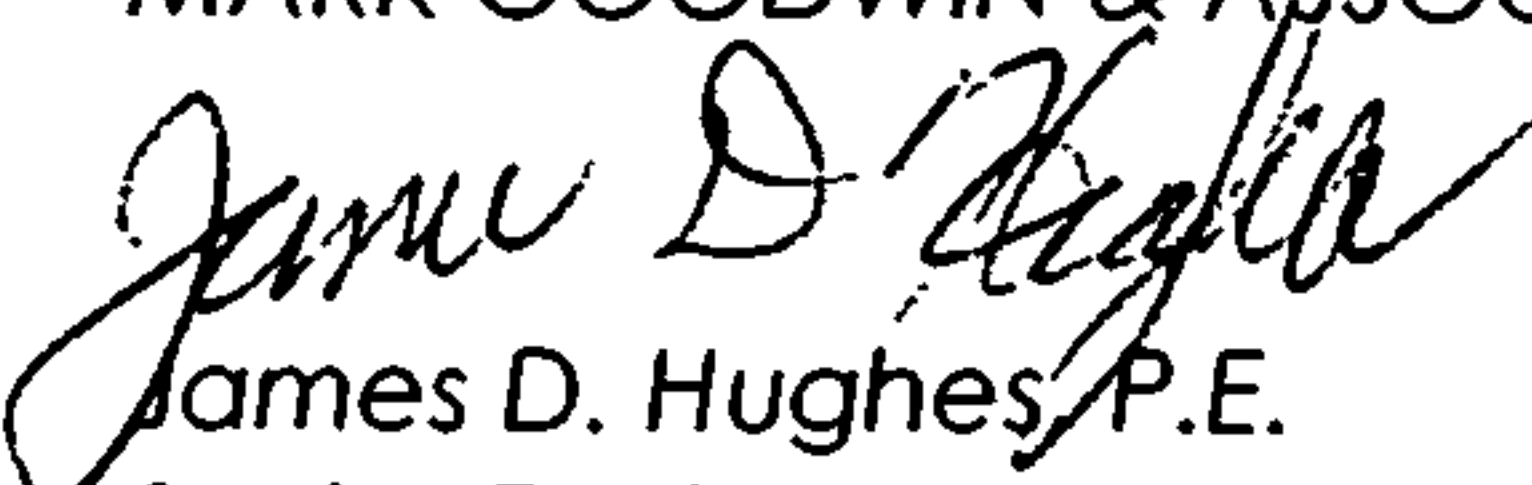
Dear Mr. Makhdoom,

Transmitted herewith please find:

1. Paper copy of E-mail from Douglas Andrews at Smith engineering response to comment #1 and PDF copy on CD.
2. Digital copies of input, output, and summary AHYMO files on CD.
3. Copies of Basin Map on 24" x 36" paper at a scale large enough so the spot elevations and contour labels are legible. Note that the only two basins contributing flow to the street immediately south of this site are B1-D and B2-D which have a 100-YR combined peak flow rate of only 92 cfs. Curve numbers are not used with AHYMO and the Time of Concentration is set to the Minimum for basins this small.
4. Paper copy and PDF on CD of the topographic survey of this site, now signed and sealed. Note that the survey shows the site is higher than surrounding terrain and does not receive any drainage from offsite, though it was much lower when the original floodplain was mapped there on it.
5. Note that fees have been paid.
6. Paper copy of original letter of explanation.
7. Paper copy of sheet 21 of 50 of the West Mesa Diversion construction plans (also in original application) shows a recently (2005) constructed 54" and 60" RCP south of this site and the old pond that used to be located on this site. The HGL is shown below the street.

If you have any questions, please feel free to contact our office.

Sincerely,
MARK GOODWIN & ASSOCIATES, P.A.


James D. Hughes, P.E.
Senior Engineer

JDH/kb
XC: Curtis Cherne Albuquerque Flood Plain Administrator
Rhett Waterman, Waterman Inc.

Attachment

Doug Hughes

From: Doug Andrews [doug@smithengineering.pro]
Sent: Tuesday, May 22, 2012 12:35 PM
To: Doug Hughes
Cc: 'Cherne, Curtis '; rpentela@cabq.org
Subject: RE: LOMR 12-06-1889P- Bernalillo County, New Mexico and Incorporated areas - Receipt Requested
Attachments: 42mod1.in; 42MOD1.OUT; 42MOD1.SUM

Doug Hughes,

Per your request below:

1. I, Douglas L. Andrews PE, was the Professional Engineer in responsible charge of the design and analysis of all of the West Mesa Diversion Projects.
2. The "Draft Copy" of the West Mesa Diversion Project Drainage Analysis is indeed the only analysis made for this project. Dan Hogan PE, then the head of the City of Albuquerque Drainage Design Section did not require that I or Smith Engineering complete or finalize the report. The "Draft Copy" was to be considered "Final", and design of the proposed storm drain system could be performed from the "Draft Copy".
3. Attached are the latest AHYMO Hydrologic input, output and summary files used for the design of the storm drain system. These files have changed ever so slightly from the report submitted in 1997 due to changes that needed to occur during the design phases. Note, no changes were made in and around the LOMR area you are working with. I do not have a real good legible copy of the basin map. I do have an old hard copy that was drafted on by hand that is probably no more legible than the one that you submitted. The map was generated by hand and is not in electronic form.

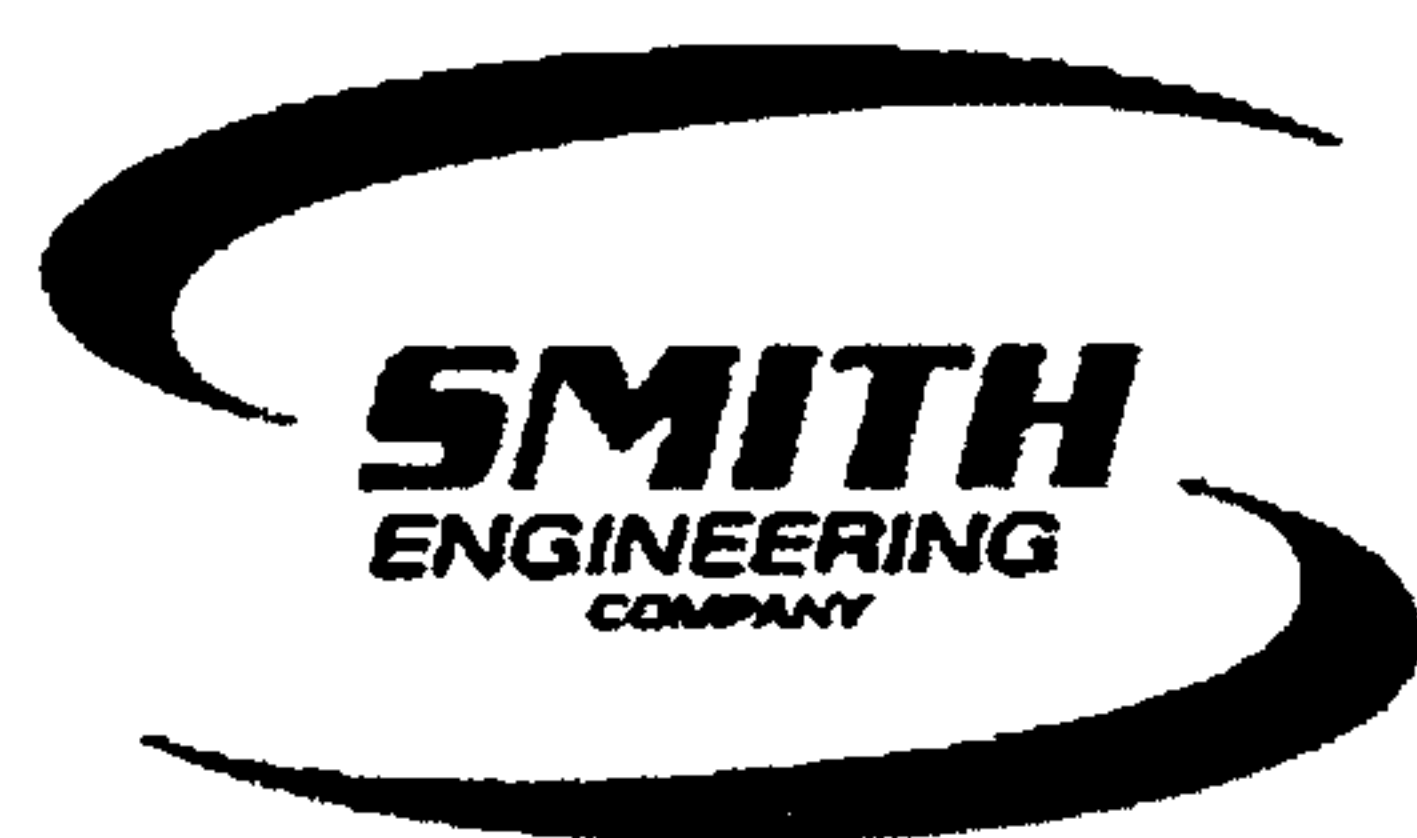
Please let me know if you need any other items relative to your FEMA submittal.

Douglas L. Andrews, P.E.

Vice President

Tel: 505.884.0700 x5594 Fax: 505.884.2376

2201 San Pedro Drive NE, Bldg 4, Suite 200, Albuquerque, NM 87110



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From: Doug Hughes [mailto:Doug@goodwinengineers.com]

Sent: Monday, May 21, 2012 12:14 PM

To: Doug@smithengineering.pro

Cc: Cherne, Curtis ; rpentela@cabq.org

Subject: FW: LOMR 12-06-1889P- Bernalillo County, New Mexico and Incorporated areas - Receipt Requested

5/24/2012

Doug,

Attached please find the FEMA LOMR comments and the Annotated FIRM. I appreciate any help that you may be able to provide in providing the West Mesa Diversion Project records. I believe, per our phone conversation last week, we established:

1. That you are the engineer in responsible charge of engineering design and analysis of the West Mesa Diversion Project(s).
2. The "Draft Report February 1987" as retrieved from the Hydrology Section of the Public Works Division of the City of Albuquerque is the latest version of the report and there never was a final version with an engineer's certification on it.
3. You will check your archived records for the digital AHYMO files and a more legible copy of the Basin Map.

Thanks,

Doug Hughes, PE

MARK GOODWIN & ASSOCIATES, PA

(505) 828-2200

(505) 797-9539 fax

(505) 821-9313 cell

doug@goodwinengineers.com

From: Makhdoom, M. Tariq [<mailto:tmakhdoom@Dewberry.com>]

Sent: Tuesday, April 10, 2012 12:35 PM

To: Doug Hughes

Cc: ccherne@cabq.gov; Pulugundla, Kavitha

Subject: LOMR 12-06-1889P- Bernalillo County, New Mexico and Incorporated areas - Receipt Requested

Dear Mr. Hughes:

This responds to your request dated March 26, 2012, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issues a revision to the Flood Insurance Rate Map (FIRM) for Bernalillo County, New Mexico and Incorporated Areas .

We have reviewed your request and determined that additional data are required to complete our review. The attached letter describes the data needed to continue reviewing your request. This e-mail replaces the paper copy of the letters previously issued by FEMA. We ask that you please respond directly to this e-mail to verify that it has been received.

If we do not receive all data items outlined in the attached letter within 90 days of the date of this e-mail, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the current fee schedule is available for your information on the FEMA Web site at http://www.fema.gov/plan/prevent/fhm/firm_fees.shtm#2 .

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact the case reviewer using the information listed below, or the Revisions Coordinator for your state, Ms. Kavitha Pulugundla, E.I.T, CFM, at kavitha_pulugundla@urscorp.com or at (703) 849-0554.

Please be assured we will do our best to respond to all inquiries in a timely manner.

5/24/2012

Thank you,

M. Tariq Makhdoom, Ph. D., CFM
Technical Leader
Dewberry
8401 Arlington Blvd.
Fairfax, VA 22031-4666
703.849.0568
703.206.0836 fax
www.dewberry.com

Visit Dewberry's website at www.dewberry.com

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5/24/2012

Cherne, Curtis

From: Cherne, Curtis
Sent: Tuesday, March 20, 2012 12:21 PM
To: 'Doug Hughes'
Subject: RE: Cedar Ridge LOMR request

Doug,
Inserted new work maps. I signed it. Gave it to Admin to mail.

Curtis

From: Doug Hughes [mailto:Doug@goodwinengineers.com]
Sent: Monday, March 19, 2012 8:47 AM
To: Cherne, Curtis
Subject: Cedar Ridge LOMR request

Please send it to FEMA

Doug Hughes, PE
MARK GOODWIN & ASSOCIATES, PA
(505) 828-2200
(505) 797-9539 fax
(505) 821-9313 cell
doug@goodwinengineers.com

3/20/2012

Cherne, Curtis

From: Doug Hughes [Doug@goodwinengineers.com]
Sent: Thursday, March 08, 2012 9:00 AM
To: Cherne, Curtis
Cc: watermanrhett@comcast.net; Mark Goodwin
Subject: RE: cedar ridge lomr

Curtis,

I assume that all of your comments pertain to the City's pond at Fortuna Rd. The LOMR request is in the name of the private property owner, Waterman Inc., so the only requested revision is on his property. We are providing additional information that is readily available from the records of the separate adjacent public project to support the revisions on Waterman Inc's property only, not revisions anywhere else on the FEMA map. There are a lot of offsite mismatched floodplains, and the Fortuna Rd. improvements do not function as planned because the construction at the west end is incomplete, and there is no way for floodwater to get into the Fortuna Rd storm sewer. Therefore we are limiting this request to the private property owned by Waterman Inc. We do not have a budget to evaluate and address the deficiencies of the offsite public system, so the City's pond is not part of this request. The City's pond and storm pipes can be documented by a separate request that includes considerable additional analysis of the incomplete system as it currently exists, but this request is limited to the Waterman's private property.

Please forward the Request to FEMA and Waterman Inc. will pay them after they get it

Doug Hughes, PE

MARK GOODWIN & ASSOCIATES, PA
(505) 828-2200
(505) 797-9539 fax
(505) 821-9313 cell
doug@goodwinengineers.com

From: Cherne, Curtis [mailto:CCherne@cabq.gov]
Sent: Wednesday, March 07, 2012 1:14 PM
To: Doug Hughes
Subject: cedar ridge lomr

Doug,
Finally got around to your LOMR.

A few things...

1. Where do I find the WSE of the revised pond in the report. WSE will help in determination of proper pond boundaries. I'm guessing the WSE is not over the entire maintenance road.
2. Should be a Zone AH. (another reason for WSE)
3. Are you mailing the check?

Curtis

Cherne, Curtis

From: Cherne, Curtis
Sent: Wednesday, March 07, 2012 1:14 PM
To: 'doug@goodwinengineers.com'
Subject: cedar ridge lomr

Doug,
Finally got around to your LOMR.

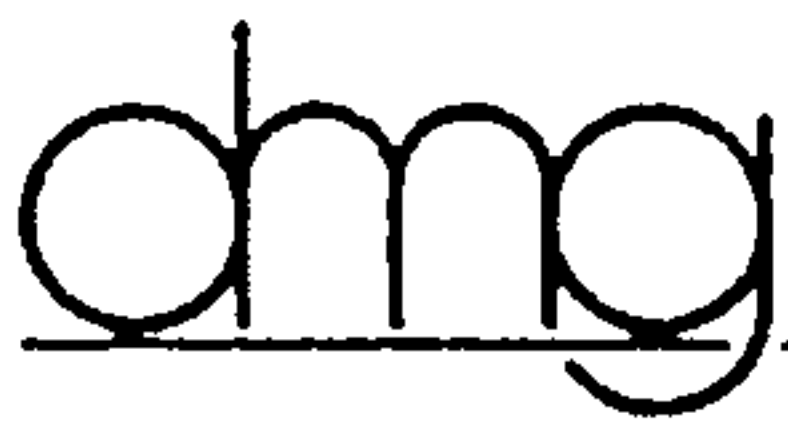
A few things...

1. Where do I find the WSE of the revised pond in the report. WSE will help in determination of proper pond boundaries. I'm guessing the WSE is not over the entire maintenance road.
2. Should be a Zone AH. (another reason for WSE)
3. Are you mailing the check?

Curtis

renew pond check for wet map

3/7/2012



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

February 10, 2012

Mr. Curtis Cherne
Flood Plain Administration
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: LOMR Request for Cedar Ridge Estates Unit 2, Block F, Lots 14, 15, 16 and 17

Dear Mr. Cherne,

This request is to remove an "A" zone from the referenced property. The basis for the request is two physical changes; one the construction of the West Mesa Diversion Storm Sewer (see attached Design Analysis Report and As-built Construction Plans) and fill placed on the lots to elevate them above the adjacent streets (see attached Topographic Survey January 2012 by Aldrich Land Surveying. The "A" zone had been mapped on this site because a temporary pond had been constructed there to retain drainage that entered the site from the Los Volcanes Rd. The storm drain constructed in 2005 diverted the drainage, so the pond was filled in 2008. Attached, please find MT-2 forms for LOMR request, Annotated FIRM, Topo Work Map, and CD with Digital File. Please sign the Community Concurrence Form, and forward this request to FEMA.

If you have any questions, please feel free to contact our office.

Sincerely,

MARK GOODWIN & ASSOCIATES, P.A.

A handwritten signature in black ink, appearing to read 'James D. Hughes'.

James D. Hughes, P.E.
Senior Engineer

JDH/kb

Attachment

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

- ☐ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch 1, Parts 60, 65 & 72).
- ☒ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
350002	City of Albuquerque	NM	35001C	0329G	09/26/00

2. a. Flooding Source:

- b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3 Project Name/Identifier: Cedar Ridge Estates, Unit 2, Lots 14, 15, 16 & 17

4 FEMA zone designations affected AO (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5 Basis for Request and Type of Revision.

a. The basis for this revision request is (check all that apply)

- ☒ Physical Change ☐ Improved Methodology/Data ☐ Regulatory Floodway Revision ☐ Base Map Changes
☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
☐ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b The area of revision encompasses the following structures (check all that apply)

Structures:

☐ Channelization

☐ Levee/Floodwall

☒ Bridge/Culvert

☐ Dam

☒ Fill

☐ Other (Attach Description)

6 ☐ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included?

☐ Yes

Fee amount. \$5,300.00

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/fm_fees.shtml for Fee Amounts and Exemptions.

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name James D. Hughes, P.E.

Company Mark Goodwin & Associates, P.A.

Mailing Address:

Daytime Telephone No : 505-828-2200

Fax No : 505-797-9539

PO BOX 90606

E-Mail Address: doug@goodwinengineers.com

Albuquerque, NM 87199

Signature of Requester (required)

Date: 2-10-12

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title Curtis Cherne, Flood Plain Manager

Community Name City of Albuquerque

Mailing Address:

Daytime Telephone No. : (505) 924-3695

Fax No. (505) 924-3864

PO Box 1293

E-Mail Address ccherne@cabq.gov

Albuquerque, NM 87103

Community Official's Signature (required)

Date 3-20-12

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name James D. Hughes, P.E.

License No 11670

Expiration Date 12/31/2012

Company Name Mark Goodwin & Associates, P.A.

Telephone No : 505-828-2200

Fax No : 505-797-9539

Signature

Date 2-10-12

E-Mail Address: doug@goodwinengineers.com

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)

Required if ...

- | | |
|---|--|
| ☒ Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations |
| ☒ Riverine Structures Form (Form 3) | Channel is modified, addition/revision of bridge/culverts,
addition/revision of levee/floodwall, addition/revision of dam |
| ☐ Coastal Analysis Form (Form 4) | New or revised coastal elevations |
| ☐ Coastal Structures Form (Form 5) | Addition/revision of coastal structure |
| ☐ Alluvial Fan Flooding Form (Form 6) | Flood control measures on alluvial fans |

Seal (Optional)

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3 5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Un-named West Mesa Storm Drainage at Los Volcanes Rd

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1 Reason for New Hydrologic Analysis (check all that apply)

- | | | |
|---|--|--|
| ☒ Not revised (skip to section B) | ☐ No existing analysis | ☐ Improved data |
| ☐ Alternative methodology | ☐ Proposed Conditions (CLOMR) | ☐ Changed physical condition of watershed |

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi)	Effective/FIS (cfs)	Revised (cfs)
----------	-------------------------	---------------------	---------------

3. Methodology for New Hydrologic Analysis (check all that apply)

- | | |
|---|--|
| ☐ Statistical Analysis of Gage Records | ☐ Precipitation/Runoff Model → Specify Model: _____ |
| ☐ Regional Regression Equations | ☐ Other (please attach description) |

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis

4 Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5 Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? ☐ Yes ☐ No

If yes, then fill out Section F (Sediment Transport) of Form 3 If No, then attach your explanation .

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit*	<u>N/A</u>	<u></u>	<u></u>	<u></u>
Upstream Limit*	<u>N/A</u>	<u></u>	<u></u>	<u></u>

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: _____

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

<u>Models Submitted</u>	<u>Natural Run</u>		<u>Floodway Run</u>		<u>Datum</u>
Duplicate Effective Model*	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Corrected Effective Model*	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Existing or Pre-Project Conditions Model	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Revised or Post-Project Conditions Model	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Other - (attach description)	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____

* For details, refer to the corresponding section of the instructions.

☐ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A certified topographic work map must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries, boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.)

☐ Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information: _____

Source: Survey by ALS, Inc. City of Albu record drawings Date: _____

Accuracy: _____

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach a copy of the effective FIRM and/or FBFM, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No
- a. For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
 - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.
- b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? ☐ Yes ☒ No
If Yes, please attach **proof of property owner notification and acceptance** (if available). Elements of and examples of property owner notifications can be found in the MT-2 Form 2 Instructions
2. Does the request involve the placement or proposed placement of fill? ☒ Yes ☐ No
- If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.
3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No
- If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)
4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
RIVERINE STRUCTURES FORM

O.M.B. NO. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. Please do not send your completed survey to the above address.

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program; Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Un-Named West Mesa Storm Drain at Los Volcanes Rd.

Note: Fill out one form for each flooding source studied.

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam..... complete Section D
Levee/Floodwall.....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Modeled Structure

1 Name of Structure: West Mesa Diversion Storm Sewer (No Model)

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Los Volcanes, Road

Downstream Limit/Cross Section: N/A

Upstream Limit/Cross Section: N/A

2. Name of Structure. _____

Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure. _____

Downstream Limit/Cross Section: _____

Upstream Limit/Cross Section: _____

3. Name of Structure: _____

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: _____

Downstream Limit/Cross Section: _____

Upstream Limit/Cross Section: _____

NOTE: FOR MORE STRUCTURES, ATTACH ADDITIONAL PAGES AS NEEDED.

B. CHANNELIZATION

Flooding Source: _____

Name of Structure: _____

1. Hydraulic Considerations

The channel was designed to carry _____ (cfs) and/or the _____-year flood.

The design elevation in the channel is based on (check one):

- ☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel

- ☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify): _____

2. Channel Design Plans

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)] ☐ Drop structures ☐ Superelevated sections
☐ Transitions in cross sectional geometry ☐ Debris basin/detention basin [Attach Section D (Dam/Basin)] ☐ Energy dissipator
☐ Weir ☐ Other (Describe): _____

4. Sediment Transport ConsiderationsAre the hydraulics of the channel affected by sediment transport? ☐ Yes ☐ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: _____

Name of Structure: _____

1. This revision reflects (check one):

- ☐ Bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): _____

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided).

- | | |
|---|--|
| ☐ Dimensions (height, width, span, radius, length) | ☐ Distances Between Cross Sections |
| ☐ Shape (culverts only) | ☐ Erosion Protection |
| ☐ Material | ☐ Low Chord Elevations – Upstream and Downstream |
| ☐ Beveling or Rounding | ☐ Top of Road Elevations – Upstream and Downstream |
| ☐ Wing Wall Angle | ☐ Structure Invert Elevations – Upstream and Downstream |
| ☐ Skew Angle | ☐ Stream Invert Elevations – Upstream and Downstream |
| | ☐ Cross-Section Locations |

4. Sediment Transport ConsiderationsAre the hydraulics of the structure affected by sediment transport? ☐ Yes ☐ No

If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

D. DAM/BASIN

Flooding Source. _____
Name of Structure. _____

1. This request is for (check one): ☐ Existing dam/basin ☐ New dam/basin ☐ Modification of existing dam/basin
2. The dam/basin was designed by (check one): ☐ Federal agency ☐ State agency ☐ Private organization ☐ Local government agency

Name of the agency or organization: _____

3. The Dam was permitted as (check one): ☐ Federal Dam ☐ State Dam

Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

Permit or ID number _____ Permitting Agency or Organization _____

- a. ☐ Local Government Dam ☐ Private Dam

Provided related drawings, specification and supporting design information

4. Does the project involve revised hydrology? ☐ Yes ☐ No

If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

Was the dam/basin designed using critical duration storm? (must account for the maximum volume of runoff)

- ☐ Yes, provide supporting documentation with your completed Form 2
- ☐ No, provide a written explanation and justification for not using the critical duration storm

5. Does the submittal include debris/sediment yield analysis? ☐ Yes ☐ No

If Yes, then fill out Section F (Sediment Transport) If No, then attach your explanation for why debris/sediment analysis was not considered?

6. Does the Base Flood Elevation behind the dam/basin or downstream of the dam/basin change? ☐ Yes ☐ No

If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below

FREQUENCY (% annual chance)	Stillwater Elevation Behind the Dam/Basin	
	FIS	REVISED
10-year (10%)	_____	_____
50-year (2%)	_____	_____
100-year (1%)	_____	_____
500-year (0.2%)	_____	_____
Normal Pool Elevation	_____	_____

7. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

- ☐ upgrading of
an existing
levee/floodwall
system ☐ a newly
constructed
levee/floodwall
system ☐ reanalysis of
an existing
levee/floodwall
system

b. Levee elements and locations are (check one):

- ☐ earthen embankment, dike, berm, etc. Station _____ to _____
☐ structural floodwall Station _____ to _____
☐ Other (describe): Station _____ to _____

c. Structural Type (check one): ☐ monolithic cast-in place reinforced concrete ☐ reinforced concrete masonry block ☐ sheet piling
☐ Other (describe): _____

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☐ Yes ☐ No

If Yes, by which agency? _____

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

- | | |
|---|----------------------|
| 1. Plan of the levee embankment and floodwall structures. | Sheet Numbers: _____ |
| 2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE),
levee and/or wall crest and foundation, and closure locations for the total levee system. | Sheet Numbers: _____ |
| 3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size
of opening, and kind of closure | Sheet Numbers: _____ |
| 4. A layout detail for the embankment protection measures. | Sheet Numbers: _____ |
| 5. Location, layout, and size and shape of the levee embankment features, foundation treatment,
Floodwall structure, closure structures, and pump stations. | Sheet Numbers: _____ |

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

- | | | |
|--|------------------------------|-----------------------------|
| 3.0 feet or more at the downstream end and throughout | ☐ Yes | ☐ No |
| 3.5 feet or more at the upstream end | ☐ Yes | ☐ No |
| 4.0 feet within 100 feet upstream of all structures and/or constrictions | ☐ Yes | ☐ No |

Coastal

- | | | |
|---|------------------------------|-----------------------------|
| 1.0 foot above the height of the one percent wave associated with the 1%-annual-chance
stillwater surge elevation or maximum wave runup (whichever is greater) | ☐ Yes | ☐ No |
| 2.0 feet above the 1%-annual-chance stillwater surge elevation | ☐ Yes | ☐ No |

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☐ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☐ exists ☐ does not exist

If opening exists, list all closures.

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

- a. The maximum levee slope land side is: _____
- b. The maximum levee slope flood side is: _____
- c. The range of velocities along the levee during the base flood is: _____ (min) to _____ (max.)
- d. Embankment material is protected by (describe what kind): _____
- e. Riprap Design Parameters (check one): ☐ Velocity ☐ Tractive stress
Attach references

Reach	Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
					D ₁₀₀	D ₅₀	Thickness	
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								

(Extend table on an added sheet as needed and reference each entry)

- f. Is a bedding/filter analysis and design attached? ☐ Yes ☐ No
- g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Attach engineering analysis to support construction plans.

5 Embankment And Foundation Stability

- a. Identify locations and describe the basis for selection of critical location for analysis.

- ☐ Overall height. Sta.: _____, height _____ ft.
- ☐ Limiting foundation soil strength:
- Strength ϕ = _____ degrees, c = _____ psf
- Slope: SS = _____ (h) to _____ (v)
- (Repeat as needed on an added sheet for additional locations)
- b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

- c. Summary of stability analysis results:

E. LEVEE/FLOODWALL (CONTINUED)

5. Embankment And Foundation Stability (continued)

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction		1.3
II	Sudden drawdown		1.0
III	Critical flood stage		1.4
IV	Steady seepage at flood stage		1.4
VI	Earthquake (Case I)		1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☐ Yes ☐ No

If Yes, describe methodology used:

e. Was a seepage analysis for the foundation performed? ☐ Yes ☐ No

f. Were uplift pressures at the embankment landside toe checked? ☐ Yes ☐ No

g. Were seepage exit gradients checked for piping potential? ☐ Yes ☐ No

h. The duration of the base flood hydrograph against the embankment is _____ hours.

Attach engineering analysis to support construction plans

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one): ☐ UBC (1988) ☐ Other (specify): _____

b. Stability analysis submitted provides for: ☐ Overturning ☐ Sliding If not, explain: _____

c. Loading included in the analyses were: ☐ Lateral earth @ $P_A =$ _____ psf, $P_p =$ _____ psf

☐ Surcharge-Slope @ _____, ☐ surface _____ psf

☐ Wind @ $P_w =$ _____ psf

☐ Seepage (Uplift), _____ ☐ Earthquake @ $P_{eq} =$ _____ %g

☐ 1%-annual-chance significant wave height _____ ft.

☐ 1%-annual-chance significant wave period: _____ sec

d. Summary of Stability Analysis Results: Factors of Safety.
Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood, & Impact	1.5	1.5				
Dead, Soil, & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)
Note: (Extend table on an added sheet as needed and reference)

E. LEVEE/FLOODWALL (CONTINUED)

6. Floodwall And Foundation Stability (continued)

e Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

- f Foundation scour protection ☐ is, ☐ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans

7. Settlement

- a Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☐ Yes ☐ No
- b. The computed range of settlement is ____ ft to ____ ft.
- c Settlement of the levee crest is determined to be primarily from ☐ Foundation consolidation ☐ Embankment compression
☐ Other (Describe): ____
- d. Differential settlement of floodwalls ☐ has ☐ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8 Interior Drainage

- a Specify size of each interior watershed.

Draining to pressure conduit: ____ acres

Draining to ponding area: ____ acres

- b. Relationships Established

Ponding elevation vs. storage ☐ Yes ☐ No

Ponding elevation vs. gravity flow ☐ Yes ☐ No

Differential head vs. gravity flow ☐ Yes ☐ No

- c. The river flow duration curve is enclosed: ☐ Yes ☐ No

- d. Specify the discharge capacity of the head pressure conduit: ____ cfs

- e Which flooding conditions were analyzed?

- Gravity flow (Interior Watershed) ☐ Yes ☐ No
- Common storm (River Watershed) ☐ Yes ☐ No
- Historical ponding probability ☐ Yes ☐ No
- Coastal wave overtopping ☐ Yes ☐ No

If No for any of the above, attach explanation.

- e Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection. ☐ Yes ☐ No If No, attach explanation.

- g. The rate of seepage through the levee system for the base flood is ____ cfs

- h. The length of levee system used to drive this seepage rate in item g ____ ft

E. LEVEE/FLOODWALL (CONTINUED)

8. Interior Drainage (continued)

- i Will pumping plants be used for interior drainage? ☐ Yes ☐ No

If Yes, include the number of pumping plants: ____ For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operation be automatic?

☐ Yes ☐ No

If the pumps are electric, are there backup power sources?

☐ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ is ☐ is not a problem

Hydrocompaction ☐ is ☐ is not a problem

Heave differential movement due to soils of high shrink/swell ☐ is ☐ is not a problem

b. For each of these problems, state the basic facts and corrective action taken

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?
☐ Yes ☐ No Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered? ☐ Yes ☐ No

If Yes, then fill out Section F (Sediment Transport) If No, then attach your explanation for why sediment transport was not considered.

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
☐ Yes ☐ No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65 10(c)(2) of the NFIP regulations?
☐ Yes ☐ No If the answer is No to any of the above, please attach supporting documentation.

E. LEVEE/FLOODWALL (CONTINUED)

11. Maintenance Plan

Please attach a copy of the formal maintenance plan for the levee/floodwall

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

CERTIFICATION OF THE LEVEE DOCUMENTATION

This certification is to be signed and sealed by a licensed registered professional engineer authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.10(e) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: _____ License No : _____ Expiration Date: _____

Company Name. _____ Telephone No.: _____ Fax No : _____

Signature. _____ Date: _____ E-Mail Address: _____

F. SEDIMENT TRANSPORT

Flooding Source: _____

Name of Structure. _____

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume _____ acre-feet

Debris load associated with the base flood discharge: Volume _____ acre-feet

Sediment transport rate _____ (percent concentration by volume)

Method used to estimate sediment transport: _____

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition: _____

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport: _____

Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

FEDERAL EMERGENCY MANAGEMENT AGENCY
PAYMENT INFORMATION FORM

Community Name: City of Albuquerque

Project Identifier: Cedar Ridge Estates, Unit 2, Lots 14, 15, 16 & 17

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Type of Request:

☐ MT-1 application
☒ MT-2 application

}

LOMC Clearinghouse
7390 Coca Cola Drive
Suite 204
Hanover, MD 21076

☐ EDR application

}

FEMA Project Library
847 South Pickett St.
Alexandria, VA 22304
FAX (703) 212-4090

Request No.: _____ (if known) Amount: \$5,300.00

☒ INITIAL FEE*☐ FINAL FEE☐ FEE BALANCE**☐ MASTER CARD☐ VISA☐ CHECK☐ MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).
**Note: Check only if submitting a corrected fee for an ongoing request

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

CARD NUMBER

EXP. DATE

Month

Year

Date Signature

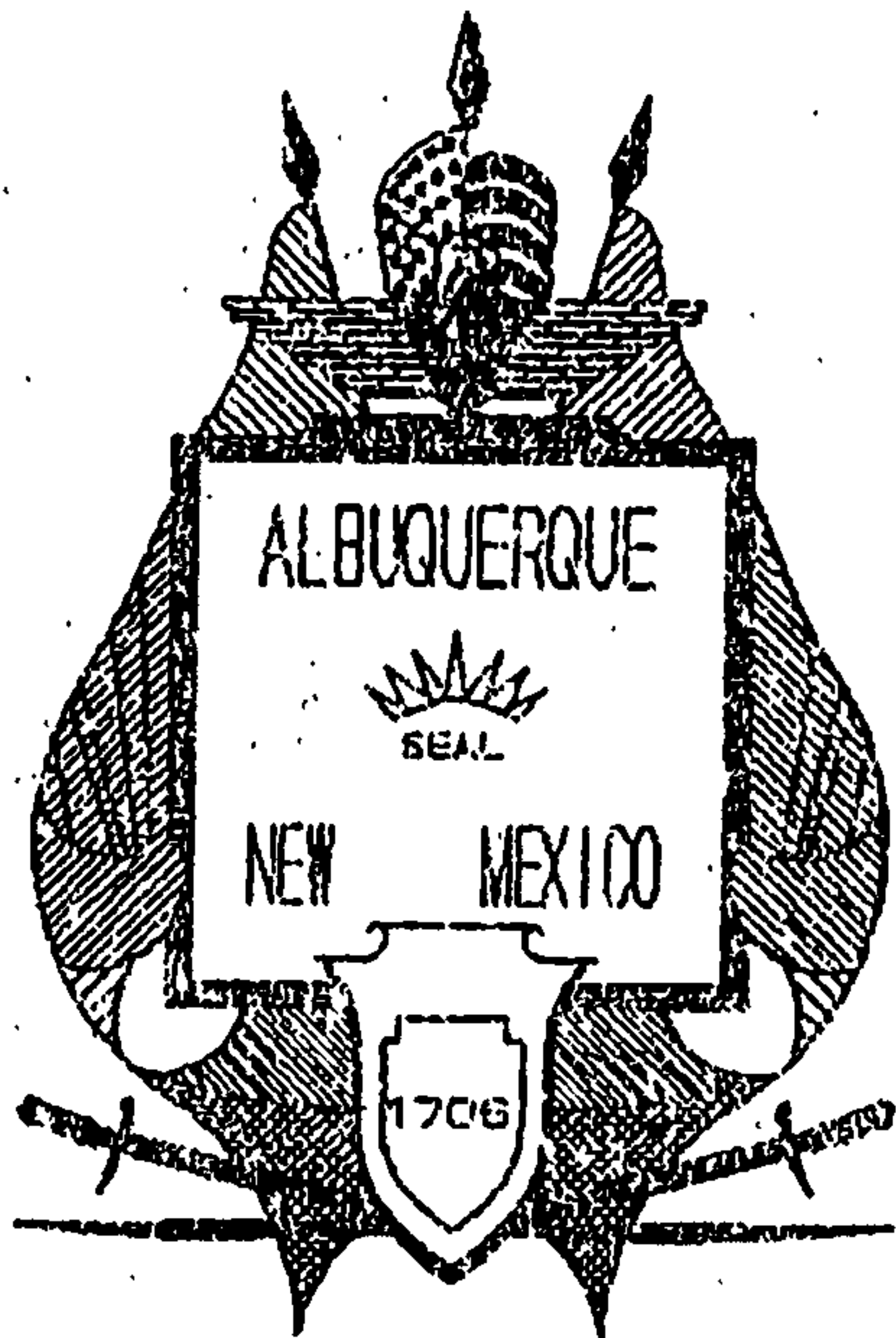
NAME (AS IT APPEARS ON CARD): _____
(please print or type)

ADDRESS: _____
(for your credit card receipt-please print or type)

DAYTIME PHONE: _____

CITY OF ALBUQUERQUE, NEW MEXICO

WEST MESA DIVERSION PROJECT DRAINAGE ANALYSIS



COA PROJECT NO. 5331-01
PUBLIC WORKS DEPARTMENT
HYDROLOGY DIVISION

Prepared by



Smith Engineering Company

A Full Service Engineering Company

DRAFT REPORT: FEBRUARY, 1997

CITY OF ALBUQUERQUE, NEW MEXICO

**WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS**

**COA PROJECT NO. 5381-01
PUBLIC WORKS DEPARTMENT
HYDROLOGY DIVISION**

DRAFT REPORT: FEBRUARY 1997

Prepared by

**SMITH ENGINEERING COMPANY
6400 UPTOWN BOULEVARD NE SUITE 500E
ALBUQUERQUE, NEW MEXICO 87110**

SEC No. 196105

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

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1. INTRODUCTION

Study Purpose 1.1 Executive Summary

The West Mesa Diversion Project drainage area is part of the West Bluff Drainage Area. The West Mesa Diversion Project drainage area consists of 0.86 square miles of partially developed land located in the northwest quadrant of the Albuquerque metropolitan area. The study area has an outfall point in the form of a double 10-foot x12-foot Concrete Box Culvert (CBC) under Interstate 40 just west of Coors Rd. The area currently lacks a storm drain system to transport the storm water generated by the basin to the outfall point. Several flood plains exist within the drainage area. The purpose of this analysis is to define and analyze alternative storm drain systems that will mitigate the flooding in the area and to recommend an alternate for construction.

1.2 Authorization

On December 16, 1996, the City of Albuquerque entered into an Engineering Services Agreement with Smith Engineering Company (A/E Job No. 5381-01) to provide a comprehensive drainage analysis of the West Mesa Diversion Project Area.

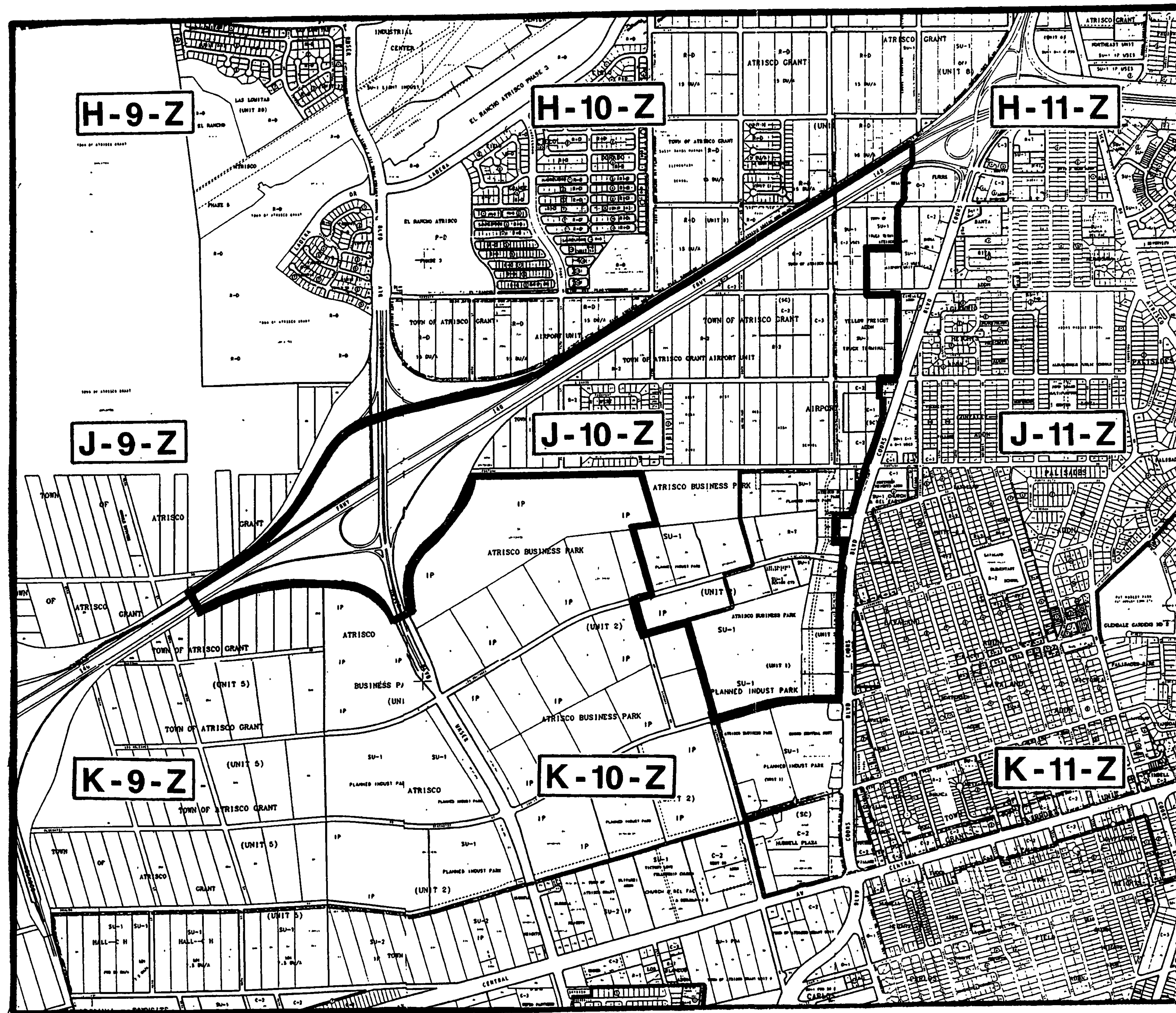
1.3 Study Area

The study area consists of a 0.86 square mile area located in the West Mesa at the vicinity of Coors Boulevard and Interstate 40. The area is bounded on the north by Interstate 40, on the south by Bluewater Road, on the west by the Atrisco Business Park Drainage Area, and on the east by Coors Boulevard. A Vicinity Map of the study area is shown on pages 2 and 3.

1.4 Scope of Study

This study includes the analysis of five proposed storm drainage systems for the West Mesa Diversion Project Area. The study includes the following tasks:

- Data Collection and Review (Reports, As-builts, etc.)
- Land Use Projections for Undeveloped Areas
- Hydrologic Evaluation of Future Land Use Conditions
- Development of Storm Runoff Conveyance Options
- Hydraulic Evaluation of Storm Runoff Conveyance Options
- Evaluation and Comparison of Conveyance Options
- Recommendation of Alternatives



LEGEND

 DRAINAGE AREA BOUNDARY



0 600 1200 2400
SCALE: 1"=1200'



Smith Engineering Company

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
HYDROLOGY DIVISION

WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS

VICINITY MAP

PROJECT NO. 5381-01	DRAWN BY BH	CHECKED BY DLA	DATE 1-97	MAP NO. 1
------------------------	----------------	-------------------	--------------	--------------

1.5 Study Goals

The purpose of this study is to provide recommendations for a storm drainage system which will effectively control storm water runoff during the 100-year, 6 hour storm event. All detention ponds were sized to control the 100-year, 24-hour storm event. The results of this study will provide technical background data and a conceptual layout for future design. The study effort includes a hydrologic and hydraulic analysis of drainage improvement options necessary to control storm water runoff.

2. STUDY RESOURCES

2.1 Study Team

The team involved in the preparation of this document included:

- John P. Murray, P.E., Project Manager - City of Albuquerque (COA),
Public Works Department
(PWD), Hydrology Division
- Steve Boberg, P.E., Design Manager - COA/PWD/Hydrology Division
- Dan Hogan, P.E., Division Manager - COA/PWD/Hydrology Division
- Smith Engineering Company - Lead Consultant to the COA

2.2 Past Studies

The West Mesa Diversion Project Drainage Area is part of the West Bluff Drainage Area and is part of a master drainage area study entitled "West Bluff Drainage Plan" was written by Andrews, Asbury and Robert, Inc., (AAR), January 1987. The purpose of the West Bluff Drainage Plan was to provide a document for use in the management of storm water within the West Bluff Drainage Area. Phase III of the AAR report provides an evaluation of the proposed drainage facilities required for a totally improved watershed for the 10 year and 100 year storm events in accordance with the COA's drainage ordinances.

The basic concept for the main storm drain corridor in 64th St. along with storm drain branch lines in adjacent, intersecting roadways presented in the West Bluff report were used as the basis for our analysis in this report. The current COA hydrology procedures were not used in the West Bluff Report nor were the developed conditions drainage basins and subbasins.

In addition there have been several drainage plans completed for individual developments in the area. The following studies pertain to the West Mesa Diversion Project area:

August 13, 1996	- Assisted Living Facility - Construction Analysis & Management, Inc.
May 22, 1995	- West Mesa Seminary - Jackie McDowell Engineering
May 7, 1996	- HUD Housing Project - Jeff Mortensen & Associates
July 15, 1986	- Water World Car Wash - Frank Lovelady & Associates
January 16, 1996	- Los Volcanes Senior Center - Burton Engineers
November 29, 1988	- West Mesa High School - Jeff Mortensen & Associates
March 18, 1988	- Atrisco Business Park Lot 1-F, 2-F & Tract F-6 - Logan/Gross, Inc.
March 6, 1981	- Merchants Incorporated - Andrews, Asbury & Robert, Inc.
August 29, 1996	- Meridian Business Park Lots 1-23 - Easterling & Associates
February 6, 1987	- Atrisco Business Park Tracts F-4 & F-5 - Tom Mann Associates, Inc.
March 7, 1988	- Westland Corporate Offices - Tom Mann Associates, Inc.
March 1982	- I-40 & Unser Contour and Grading Plan - Wilson & Company
July 15, 1992	- Iliff Street Motel - Resource Technology, Inc.
April 29, 1996	- Holiday Inn Express - D. Mark Goodwin & Associates, P.A.
March 30, 1995	- Elastimold - Jeff Mortensen & Associates, Inc.
September 16, 1996	- Cedar Ridge Subdivision Units 1,2,3 - Brasher & Lorenz, Inc.

2.3 Mapping

The 1"=500' mapping used for the drainage analysis was obtained from Bohanan, Houston Inc., (BHI). BHI is currently using the same mapping in their development of the Interstate 40 Drainage Management Plan for the Albuquerque Metropolitan Arroyo and Flood Control Authority (AMAFCA). The aerial photograph was taken on October 30, 1995. Contours were produced by BHI and compiled from aerial photography from March 1980.

The recent aerial photography was used to determine and verify existing land use in the study area. The orthophoto topographic mapping was used to assist in the delineation of drainage basins. The mapped area is larger than the study area and covers portions of nine COA Zone Atlas sections (H-9, H-10, H-11, J-9, J-10, J-11, K-9, K-10, K-11).

3.0 BASIN CHARACTERISTICS

3.1 Drainage Basin Boundaries

The West Mesa Diversion study area comprises a drainage basin of approximately 0.86 square miles. The West Mesa Diversion Project drainage area is bounded on the north by Interstate 40, on the south by Bluewater Road, on the west by the Atrisco Business Park, and on the east by Coors Boulevard. The basin slopes from the west to the east and northeast. Slopes range from 2% in the western portion of the drainage area to 0.1% closer to the eastern portion of

the basin. There are several natural depressions (playas) within the basin that produce flood plains throughout the basin. The entire watershed study area is contained within City of Albuquerque limits and is shown on the Drainage Area Map, Map 3 in the pockets at the back of the report.

Presently, flows generated north of Interstate 40 drain to the West Mesa Diversion study area through culverts under I-40. AMAFCA is planning to construct a diversion channel, the I-40 Interceptor, to be located on the north side of I-40 that will intercept these flows and divert them northeast to the West Bluff Outfall and eventually to the Rio Grande River. There is an existing storm drain system in Coors Rd. designed to handle flows generated from property adjacent to Coors Rd. Flows generated south of Bluewater Road drain to the south and southwest, away from the West Mesa Diversion Project drainage area. There is an existing storm drain in Airport Road that intercepts flows from the Atrisco Business Park Drainage area and conveys these flows to the south.

Leads to early
The study area is characterized by a mixture of industrial development, commercial development, moderate to high density single family detached residential development, apartments, and West Mesa High School. A large portion of the watershed is undeveloped. The lack of present development is due to the absence of existing storm drainage facilities. At this time, development in the area requires on-site retention ponds for the control of storm water runoff. It is believed that once a major storm drainage system is built, development in the area will substantially increase.

3.2 Zoning and Land Use

The zoning information used for this report was taken from the 1994 City of Albuquerque Zone Atlas Maps. There is not a Development Sector Plan for the West Mesa Diversion Project area. Zoning is shown on the Vicinity Map, pages 2 and 3.

3.3 Area Soils

There are approximately three soil types found within the study area. These are the Madurez loamy fine sand, Pajarito loamy fine sand, and Bluepoint loamy fine sand. Each of these soils is classified as hydrologic soil group B. The native vegetation is mainly mid- and short grasses and shrubs. Soils data and descriptions were obtained from the "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico", June, 1977.

3.4 Planned or Pending Developments and Projects

The Cedar Ridge Subdivision, a residential subdivision, is the only development currently taking place in the study area. The runoff from Cedar Ridge is collected in an internal storm drain system that outlets to an existing 12 acre-feet retention basin located south of Fortuna Road, adjacent to the existing 90 foot drainage easement, across from West Mesa High School. Future Cedar Ridge plans include connection of the storm drain system into the West Mesa Diversion Project storm drain system.

3.5 Existing Public Utilities

Data on existing public utilities was taken from COA facility maps for water and sewer lines, and from recorded "as built" construction drawings. Several sanitary sewers and water lines are present in the study area. There are conflicts with the proposed storm drain system and the existing public utilities. Waterline conflicts can be resolved by raising or lowering the waterlines and installing air release valves as required. The sanitary conflicts will be resolved by relaying pipe at different grades so as not to interfere with the proposed storm drain pipe. The utilities that conflict with all proposed storm drain alternatives are listed as follows:

- 10-inch sanitary sewer at Interstate 40 and 64th Street
- 8-inch sanitary sewer in Hanover Road at 64th Street
- 16-inch water line in Glenrio Road at 64th Street
- 10-inch waterline in 64th St. at Fortuna Road
- 12-inch water line in Los Volcanes Road at 64th Street
- 8-inch sanitary sewer line in Glenrio Road between 68th Street and 64th Street
- 16-inch waterline in Glenrio Road between 68th Street and 64th Street

3.6 Existing Drainage Facilities

There are existing drainage structures within the study area which influence the design of the West Mesa Diversion storm drain system. Two existing 10' x 12' concrete box culverts (CBC) located under I-40 near Coors Boulevard will serve as the discharge point for flows generated from the West Mesa Diversion Project storm drain. The CBC's tie into the West Bluff Outfall. The West Bluff Outfall drainage structure is a 14' x 14' CBC which flows east along the northern side of I-40 right of way. There is an existing agreement between the COA and the AMAFCA limiting the discharge from the West Mesa Diversion area to the West Bluff Outfall channel to 790 cfs.

There are several existing concrete pipe, concrete box and corrugated metal pipe culverts that direct flow from off-site basins north of I-40 to the study area. The

sizes and locations of these culverts are shown on Map No. 3, the Developed Conditions Drainage Area Map. This report assumes that the I-40 interceptor will be constructed soon and the flows from these pipes will be intercepted by this channel. The I-40 Interceptor will also connect to the West Bluff Outfall.

4. HYDROLOGY

4.1 Hydrologic Criteria

The hydrologic analysis of the West Mesa Diversion Area utilizes the methodology from the COA's Development Process Manual (DPM) - Volume 2, Design Criteria - Section 22.2, Hydrology, dated January 1993 (DPM 22.2). The design storm is the 100-year, 6-hour event. The 100-year, 24-hour event was also analyzed for sizing the proposed detention basins.

The computer program, AHYMO (ver. 0194) was used to compute the runoff for the study area. Flows were routed through streets, storm drains, and detention basins. The total study area was divided into 25 sub-basins. Sub-basin delineation was developed from existing development, current plat information and field reconnaissance.

Land Treatments were determined from the COA Zone Atlas Map, aerial photography, and field reconnaissance. Table 1 presented on page 9 links the zoning provided to the appropriate land treatments used in the AHYMO computer model.

The time-to-peak (T_p) for each sub-basin was computed using the SCS Upland Method for sub-basin lengths less than 4,000 feet. No sub-basin had a length greater than 4,000 feet. Flow paths were generally assumed to follow existing or future streets and parking lots. The flow path for each sub-basin was divided into as many as five reaches due to varying slopes within a basin and changes in direction of the flow. A minimum time-to-peak of 0.133 hours was used for sub-basins that had a shorter time-to-peak. The AHYMO parameter worksheet is shown in Table 2 on pages 10 and 11.

4.2 Hydrologic Assumptions

Developed land use conditions were assumed for the hydrologic modeling of the study area. Where vacant or undeveloped parcels presently exist, the COA Zone Atlas Map was used to predict future land use conditions.

TABLE 1
WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS
LAND TREATMENTS

ZONE DESIGNATION	LAND TREATMENTS			
	"A"	"B"	"C"	"D"
<u>RESIDENTIAL</u>				
R-1		43		57
R-2		30		70
<u>INDUSTRIAL</u>				
IP		20		80
<u>COMMERCIAL</u>				
C-1		10		90
C-2		10		90
C-3		10		90
<u>SCHOOLS</u>				
WEST MESA HIGH SCHOOL		50		50
<u>PARKS</u>				
SUB-BASIN C6-D		93		7
<u>NMSHTD RIGHT OF WAY</u>				
<u>SUB-BASINS</u>				
I-40D-1 & I-40D-2	75			25
I-40D-3, I-40D-4, I-40D-5	36			64

Percent land treatment "D" taken from Table A-5, DPM Section 22.2

TABLE 2
WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS
AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES
DEVELOPED CONDITIONS

BASIN	AREA (sq.mi.)	LENGTH (ft.)	ELEV. DIFF. (ft.)	SLOPE (%)	K	VEL (fps)	T(c) (hr.)	T(p) (hr.)	LAND TREATMENT (%)				10 YEAR		100 YEAR	
									A	B	C	D	PEAK FLOW (6hr.) (cfs)	RUNOFF VOLUME (24hr.) (ac.ft.)	PEAK FLOW (6hr.) (cfs)	RUNOFF VOLUME (24hr.) (ac.ft.)
A1-D	0.0644	400	1.0	0.25	1.0	0.50	0.22	0.15								
		600	1.0	0.17	2.0	0.82	0.20	0.14								
		1000	4.0	0.40	3.0	1.90	0.15	0.10								
		350	1.0	0.29	3.0	1.60	<u>0.06</u>	<u>0.04</u>								
		TOTAL =					0.63	0.42		20		80	55	4.3	88	7.1
B1-D	0.0293	200	2.0	1.00	1.0	1.00	0.06	0.04								
		300	2.5	0.83	3.0	2.74	0.03	0.02								
		300	2.0	0.67	3.0	2.45	0.03	0.02								
		250	2.0	0.80	3.0	2.68	0.03	0.02								
		450	5.0	1.11	3.0	3.16	<u>0.04</u>	<u>0.03</u>								
		TOTAL =					0.19	0.12		20		80	48	2.0	76	3.2
B2-D	0.0185	300	1.0	0.33	1.0	0.58	0.14	0.10								
		400	1.0	0.25	3.0	1.50	0.07	0.05								
		1100	2.0	0.18	3.0	1.28	<u>0.24</u>	<u>0.16</u>								
		TOTAL =					0.46	0.30		20		80	20	1.2	31	2.0
B3-D	0.0190	400	2.0	0.50	1.0	0.71	0.16	0.10								
		850	2.0	0.24	3.0	1.46	<u>0.16</u>	<u>0.11</u>								
		TOTAL =					0.32	0.21		10		90	27	1.4	42	2.3
C1-D	0.0508	1075	5.0	0.47	3.0	2.05	0.15	0.10								
		400	2.0	0.50	3.0	2.12	0.05	0.03								
		650	2.0	0.31	3.0	1.68	0.11	0.07								
		250	1.0	0.40	3.0	1.90	<u>0.04</u>	<u>0.02</u>								
		TOTAL =					0.34	0.23		30		70	57	3.1	93	5.1
C2-D	0.0176	700	2.0	0.29	2.0	1.07	0.18	0.12		30		70	26	1.1	43	1.8
C3-D	0.0175	400	1.0	0.25	1.0	0.50	0.22	0.15								
		1000	2.0	0.20	3.0	1.34	<u>0.21</u>	<u>0.14</u>								
		TOTAL =					0.43	0.29		20		80	19	1.2	30	1.9
C4-D	0.0382	400	2.0	0.50	3.0	2.12	0.05	0.03								
		1000	21.0	2.10	3.0	4.35	<u>0.06</u>	<u>0.04</u>								
		TOTAL =					0.12	0.08		30		70	57	2.3	93	3.9
C5-D	0.0395	200	1.0	0.50	1.0	0.71	0.08	0.05								
		600	4.0	0.67	3.0	2.45	0.07	0.05								
		550	7.0	1.27	3.0	3.38	0.05	0.03								
		150	0.5	0.33	3.0	1.73	0.02	0.02								
		400	2.0	0.50	3.0	2.12	<u>0.05</u>	<u>0.03</u>								
		TOTAL =					0.27	0.18		43		57	44	2.0	75	3.5
C6-D	0.0165	400	1.0	0.25	0.7	0.35	0.32	0.21								
		700	4.0	0.57	2.0	1.51	<u>0.13</u>	<u>0.09</u>								
		TOTAL =					0.45	0.30		93		7	5	0.3	13	0.7
C7-D	0.0185	1100	5.0	0.45	3.0	2.02	0.15	0.10								
		140	1.0	0.71	3.0	2.54	0.02	0.01								
		900	3.0	0.33	3.0	1.73	<u>0.14</u>	<u>0.10</u>								
		TOTAL =					0.31	0.21		30		70	22	1.1	36	1.9
D1-D	0.0327	400	1.0	0.25	1.0	0.50	0.22	0.15								
		1100	3.0	0.27	2.0	1.04	<u>0.29</u>	<u>0.20</u>								
		TOTAL =					0.51	0.34		50		50	23	1.5	40	2.7
D2-D	0.0295	400	1.0	0.25	1.0	0.50	0.22	0.15								
		1400	6.0	0.43	2.0	1.31	<u>0.30</u>	<u>0.20</u>								
		TOTAL =					0.52	0.35		50		50	20	1.4	35	2.4

TABLE 2
WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS
AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES
DEVELOPED CONDITIONS

BASIN	AREA (sq.mi.)	LENGTH (ft.)	ELEV. DIFF. (ft.)	SLOPE (%)	K	VEL (fps)	T(c) (hr.)	T(p) (hr.)	LAND TREATMENT (%)				10 YEAR		100 YEAR	
									A	B	C	D	PEAK FLOW (6hr.) (cfs)	RUNOFF VOLUME (24hr.) (ac.ft.)	PEAK FLOW (6hr.) (cfs)	RUNOFF VOLUME (24hr.) (ac.ft.)
D3-D	0.0264	400 1000	1.0 2.0	0.25 0.20	1.0 3.0	0.50 1.34	0.22 0.21 0.43	0.15 0.14 0.29								
	TOTAL =									10		90	31	2.0	49	3.1
D4-D	0.0150	200 1050	4.0 17.0	2.00 1.62	1.0 3.0	1.41 3.82	0.04 0.08 0.12	0.03 0.05 0.08								
	TOTAL =									30		70	22	0.9	37	1.5
D5-D	0.0389	200 525 800	2.0 4.0 5.0	1.00 0.76 0.63	1.0 3.0 3.0	1.00 2.62 2.37	0.06 0.06 0.09 0.20	0.04 0.04 0.06 0.14								
	TOTAL =									30		70	54	2.2	87	3.7
D6-D	0.0233	200 300 900	1.0 1.0 2.0	0.50 0.33 0.22	1.0 3.0 3.0	0.71 1.73 1.41	0.08 0.05 0.18 0.30	0.05 0.03 0.12 0.20								
	TOTAL =									30		70	28	1.4	46	2.4
E1-D	0.0343	400 1100	1.0 5.0	0.25 0.45	1.0 2.0	0.50 1.35	0.22 0.23 0.45	0.15 0.15 0.30								
	TOTAL =									10		90	40	2.5	62	4.1
E2-D	0.0501	200 250 900	1.0 1.0 4.5	0.50 0.40 0.50	1.0 3.0 3.0	0.71 1.90 2.12	0.08 0.04 0.12 0.23	0.05 0.02 0.08 0.16								
	TOTAL =									15		85	79	3.6	123	5.7
F1-D	0.0316	200 500 500	0.5 2.0 2.0	0.25 0.40 0.40	1.0 3.0 3.0	0.50 1.90 1.90	0.11 0.07 0.07 0.26	0.07 0.05 0.05 0.17								
	TOTAL =									10		90	50	2.3	78	3.8
I-40D-1	0.1260	400 2000 200 400	6.0 40.0 6.0 2.0	1.50 2.00 3.00 0.50	1.0 1.0 1.0 2.0	1.22 1.41 1.73 1.41	0.09 0.39 0.03 0.08 0.59	0.06 0.28 0.02 0.05 0.40								
	TOTAL =								25			75	38	3.0	82	6.4
I-40D-2	0.0484	400 1050 350	10.0 25.0 4.0	2.50 2.38 1.14	0.7 2.0 3.0	1.11 3.09 3.21	0.10 0.09 0.03 0.23	0.07 0.06 0.02 0.15								
	TOTAL =								25			75	27	1.2	62	2.4
I-40D-3	0.0090	400 800 150	4.0 7.0 1.5	1.00 0.88 1.00	0.7 2.0 3.0	0.70 1.87 3.00	0.16 0.12 0.01 0.29	0.11 0.08 0.01 0.19								
	TOTAL =								36			64	10	0.5	16	0.8
I-40D-4	0.0136	400 1100 150	2.0 10.0 1.5	0.50 0.91 1.00	0.7 2.0 3.0	0.49 1.91 3.00	0.22 0.16 0.01 0.40	0.15 0.11 0.01 0.27								
	TOTAL =								36			64	12	0.7	20	1.2
I-40D-5	0.0147	400 1600 150	3.0 11.0 1.5	0.75 0.69 1.00	0.7 2.0 3.0	0.61 1.66 3.00	0.18 0.27 0.01 0.47	0.12 0.18 0.01 0.31								
	TOTAL =								36			64	12	0.8	20	1.3

4.3 Results of Hydrologic Analysis

The 100-year, 6-hour event produced an average peak discharge of 3.3 cfs/acre for the developed sub-basins. The average runoff volume was about 0.17 acre-feet/acre. These values compare well with developed conditions of surrounding watersheds. The runoff parameters, peak discharges and runoff volumes for each sub-basin are shown in Table 2. The AHYMO summary output for the base model and for the selected alternatives can be found in Appendix B. The complete input and output of the selected AHYMO models can be obtained from Smith Engineering Company.

4.4 Sediment Issues

There has been several sediment studies for the west side of Albuquerque that quantify a bulking factor to apply to a developed watershed area. In March 1984, Dr. Richard J. Heggen of the University of New Mexico completed a sediment study for the Amole Arroyo - Westgate Dam drainage area entitled, "Sediment Issues in the Amole Basin." In this report he studied the sediment yield and sediment transport within the watershed. The study determined that a 100-year bulking factor for existing conditions is 0.025 or 2.5% sediment. As a conservative measure Smith Engineering utilized this number for developed conditions. This factor was applied to the AHYMO models "SEDIMENT BULK" routine. The 2.5% sediment bulking factor is also used in BHI's report for AMAFCA on the I-40 Interceptor Drainage Management Plan.

5. FLOOD PLAINS

5.1 Existing Flood Plains

A review of the Federal Emergency Management Agency (FEMA) maps shows that the West Mesa Diversion Project study area has several areas that are designated as flood hazard areas. These flood hazard areas are designated as Zone AH flood plains. A Zone AH flood plain is classified as an area of ponding water at depths of zero to two feet. The flood plains in the study area are due to natural depressions (playas) in the land.

The storm drain alternatives that are proposed in this report would provide a means to remove these flood plains from the study area through the Conditional Letter of Map Revision (CLOMR) process of FEMA. After the storm drain system is constructed, a Letter of Map Revision (LOMR) could be filed with FEMA for their review and possible approval. If the LOMR application is approved the flood plain areas would be removed from the flood plain map by FEMA. The CLOMR/LOMR applications would be the responsibility of the individual property owners and

would not be provided by the COA. Map No. 2, pages 14 and 15, shows the existing flood plains in the West Mesa Diversion Project Area.

6. HYDRAULIC ANALYSIS

6.1 Hydraulic Criteria

The City of Albuquerque Development Process Manual, Section 22.3 was used as the hydraulic design criteria in this drainage analysis. The street capacities along with the pipe design criteria were strictly followed. Street capacities were calculated with water depth not exceeding the top of the City of Albuquerque's Standard 8-inch curb. Roadways were assumed to be crowned with 2 percent transverse slopes. Manning's equation was used to calculate street flows assuming an "n" value of 0.017. Slope and width of existing streets were obtained from the COA as-built plans and from existing topography. All street flow was assumed to be evenly distributed on both sides of the street. Pipe capacities were calculated with storm drain pipe flowing under pressure when possible, the hydraulic grade line not exceeding the top of pavement elevation, and Manning's "n" values of 0.013. Detention ponds were sized with a minimum of three feet of free board.

6.2 Analysis of Proposed Storm Drain System

The capacity of each of the proposed storm drains was determined using the computer program Storm Sewers version 7.0 by Engineering Data Systems Corporation. The program is a hydraulic modeling application for storm drain piping systems. The model is capable of handling non-uniform flow situations and performing hydraulic grade line (HGL) computations. The EDS program incorporates pressure flow, minor junction losses, and the pipe analysis as a whole system rather than individual pipe capacities. It should be noted, that the hydraulic pipe analysis assumes steady flow conditions while the hydrology analysis (AHYMO) computes change in flow with respect to time. The hydrology model incorporates water routed through pipe systems but is unable to analyze the HGL within the pipe.

The starting hydraulic grade line used in the analysis of the proposed storm drain system was determined by finding the flow in the I-40 Interceptor/West Bluff Outfall that occurs at the peak flow of each alternative. These two flows were then added to get a maximum peak flow at the confluence of the I-40 Interceptor and the twin 10-foot x 12-foot CBC's under I-40. Backwater calculations were performed, using the direct-step method, to determine the starting HGL at the West Mesa Diversion outfall point on the south side of I-40 in the twin 10-foot x

12-foot CBC's. This controlling HGL was then used as the starting HGL for the hydraulic analysis of each alternative.

Sizing of the proposed storm drains and sizing and storage in proposed detention basins was based upon the beginning HGL, the expected design storm, slope of pipe, slope of existing ground, and ground cover over the pipe. Detailed design in future phases will fine tune the slopes and sizes of proposed lines. Separate AHYMO models were developed for the proposed alternatives and these summary outputs are shown in Appendix B.

The proposed public ^{proposed areas} storage facilities are presented as detention ponds. The detention ponds were modeled using the AHYMO program. Therefore, all proposed storage ponds are modeled with an assumption that all storm water flows into the storage pond. Then a proposed discharge, given storage pond depth, is modeled from the storage pond. The proposed detention ponds could also be designed as surge ponds. The surge ponds would only accept storm water during a significant storm; i.e., when the adjacent storm drain pipe's hydraulic grade line exceeds the surge pond's bottom elevation. Detailed design in future phases will address the detention vs. surge pond issues.

7. STORM DRAIN SYSTEM ALTERNATIVES

7.1 Alternative Selection Process

The alternative selection process began with meeting of the design team on November 27, 1996. Several preliminary alternatives were selected for analysis based on preliminary data collection and design criteria which included construction costs, land acquisition, existing easements and right-of-way, ease of construction, and level of relief. The following is a list of the alternatives selected for analysis:

<u>Alternative</u>	<u>Description</u>
1A	Free discharge, 790 cfs: Storm drain system designed for free discharge conditions, with maximum discharge rate at basin outfall to be 940 cfs. This alternative was to be used as a comparative tool for the other alternatives.
1B	Basin Management. Individual property owners are responsible for controlling runoff. Maximum discharge rate at basin outfall to be 790 cfs.

1B
C

Basin Management. Individual property owners are responsible for controlling runoff. Maximum discharge rate at basin outfall to be approximately 500 cfs.

2A1

*Need more
flowing
chasing
in.*

The proposed storm drain system will include the Cedar Ridge Detention Pond. Maximum discharge rate at basin outfall to be approximately 500 cfs.

2A2

*2nd - 3rd
OK*

The proposed storm drain system will include a smaller Cedar Ridge Detention Pond. Maximum discharge rate at basin outfall to be 790 cfs.

2B1

461 cfs

The proposed storm drain system will include the American Furniture Detention Pond. Maximum discharge rate at basin outfall = 790 cfs.

2B2

The proposed storm drain system will include a smaller American Furniture Detention Pond. Maximum discharge rate at basin outfall = 790 cfs.

2B3

401 cfs

The proposed storm drain system will include a larger American Furniture Detention Pond. Maximum discharge rate will be determined from AHYMO model.

2C1

The proposed storm drain system will include a detention pond on West Mesa High School football field and track area. Maximum discharge rate at basin outfall to be 500 cfs.

2C2

The proposed storm drain system will include a detention pond on West Mesa High School football field and track area. Maximum discharge rate at basin outfall to be 790 cfs.

3

The proposed storm drain system will include two detention ponds. The Cedar Ridge Detention Pond and a detention pond near Hanover Road. Maximum discharge rate will be determined from AHYMO model.

After the analysis of the alternatives were complete, a second meeting was held with the study team on December 11, 1996 and five alternatives were selected for presentation in this report. The five alternatives selected are 1B, 1C, 2A1, 2B1 and 2B3.

Construction cost estimates were developed for each of the proposed alternatives using the City of Albuquerque Public Works Department City Engineer's Estimated Unit Prices For Contract Items, Spring 1992. These costs were supplemented through information obtained from Hydro-Conduit Corporation in November 1996 for recent prices on reinforced concrete pipe and trenching and backfill costs. The cost estimates presented in this report use a 25 percent contingency for construction costs. Construction cost summaries for each of the alternatives are shown in Table 3, page 19.

7.2 Alignment of Proposed Storm Drain

The alignment of the West Mesa Diversion Project main line storm drain is based on existing City of Albuquerque right-of-way, existing drainage easements in the study area, and the proposed alignment presented in the "West Bluff Drainage Plan Phase III." The main storm drain line used in all of the alternatives begins at the double 10-foot x 12-foot CBC and (proceeding up the system) extends southwest along Interstate 40 to 64th Street. The line then proceeds south in 64th Street to Fortuna Road, and from Fortuna Road, the line heads south in a ninety foot drainage easement towards Bluewater Road. Storm drain branch lines are proposed in Illif Road, Hanover Road, Glenrio Road, Fortuna Road, and Los Volcanes Road. The branch lines are required to drain existing ponding areas.

7.3 Base Model Hydrology

The hydrology for the considered alternatives were derived from a base AHYMO model created by SEC. The extent of the drainage basins for the base model were determined from analysis of existing contours, review of existing development, review of all drainage plans, existing reports for the area, and prediction of future land uses for undeveloped areas based on the current City of Albuquerque Zone Atlas designations. The sub-basins within the watershed were broken up into areas that matched existing platting.

Presently, many of the existing developments have on-site retention ponds for storm water control. However, the base model assumes that all of the flow from the individual developments is reaching the public streets and there is not any on-site ponding (free discharge for all properties). Using these assumptions, the peak discharge at the West Mesa Diversion Outfall is 940 cfs. The watershed, sub-basins, analysis point locations and peak flows are presented on the Developed Conditions Drainage Area Map, Map No. 3.

540,425, picks

TABLE 3
WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS
CONSTRUCTION AND LAND COST COMPARISON

ALTERNATIVE	DESCRIPTION	MAXIMUM DISCHARGE AT OUTFALL	ESTIMATED CONSTRUCTION COST**	LAND ACQUISITION COST	TOTAL ESTIMATED PROJECT COST	COMMENTS
Alternative 1						
1A	Free Discharge	940 cfs	\$7,694,030	\$2,235	\$7,696,265	Cost for storm drain system using AHYMO base model. To be used for comparative purposes only. No Detention Ponds.
1B *	Basin Management	790 cfs	\$6,322,863	\$2,235	\$6,325,098	No Public Detention Ponds. Individual Property Owners to detain water.
1C *	Basin Management	510 cfs	\$5,007,635	\$2,235	\$5,009,870	No Public Detention Ponds. Individual Property Owners to detain water.
Alternative 2						
2A1*	Cedar Ridge Detention Pond.	516 cfs	\$5,291,004	\$2,235	\$5,293,239	Land acquisition cost for detention pond assumed to be zero. Could require purchase of 231 ft. x 538 ft. area resulting in a land acquisition cost of \$124,278.
2A2	Cedar Ridge Detention Pond.	790 cfs	\$6,431,690	\$2,235	\$6,433,925	Land acquisition cost for detention pond assumed to be zero. Could require purchase of 231 ft. x 375 ft. area resulting in a land acquisition cost of \$86,625.
2B1 *	American Furniture Detention Pond.	461 cfs	\$5,519,416	\$191,235	\$5,710,651	Land acquisition for detention pond 450 ft. x 420 ft.
2B2	American Furniture Detention Pond	790 cfs	See Comments	See Comments	See Comments	Analysis not performed. Results expected to be similar to Alt. 2A2.
2B3 *	American Furniture Detention Pond (Large Pond)	401 cfs	\$5,391,633	\$437,775	\$5,829,408	Land acquisition for detention pond 1037 ft. x 420 ft.
2C1	West Mesa High School Detention Pond. Maximum Flow from Basin = 500cfs	See Comments	See Comments	See Comments	See Comments	Construction Not Feasible.
2C2	West Mesa High School Detention Pond. Maximum Flow from Basin = 800cfs	See Comments	See Comments	See Comments	See Comments	Construction Not Feasible.
Alternative 3						
3	Cedar Ridge Detention Pond and Hanover Detention Pond.	365 cfs	\$5,023,835	\$344,283	\$5,368,118	Land acquisition for two detention ponds 231 ft. x 538 ft. and 210 ft. x 1037 ft.

Note: Land Acquisition Costs assume purchase price of \$1.00 per square foot.
 Land Acquisition Costs for easements assume purchase price of \$0.50 per square foot.
 All Alternatives include easement cost of \$2,235 for area at north end of 64th Street.

* Alternatives selected for presentation in this report.

** Includes 25% contingency

1.00 \$ for here.

7.4 Alternative 1A

Alternative 1A is based on the hydrology base model. This alternative requires main line sections of 10-foot x 10-foot concrete box section (CBS) and 8-foot x 10-foot CBS. These sizes are consistent with the original sizing proposed in the West Bluff Drainage Plan. These large sections of box culvert do not produce a cost effective alternative and this alternative violates the maximum discharge agreement between the City of Albuquerque and AMAFCA. It was determined by the design team that this alternative would not provide for a cost efficient option for the public or for the City of Albuquerque Hydrology Division. However, this alternative will be used as a comparison tool for the other alternatives. The cost for Alternative 1A is \$7,694,030.

7.5 Alternative 1B

Alternative 1B proposes a basin management approach to storm water control. Basin management is defined as each property owner being responsible detaining the storm water runoff on their site and releasing the runoff at a controlled rate which is less than the peak discharge rate for the sub-basin. This allows for the main storm drain system to be smaller in size and reduces the construction costs. This alternative does not include any City owned or maintained detention basins.

The peak outflow of Alternative 1B is limited to 790 cfs at the basin outfall which is the maximum discharged allowed from the basin in the agreement between the City of Albuquerque and AMAFCA. In order to model the 790 cfs outflow, the sub-basin hydrographs in the base AHYMO model were reduced approximately 16 percent to achieve this discharge rate. This was accomplished by setting the bulking factor equal to 0.84 in the AHYMO base model. By reducing the AHYMO base flow to the required 790 cfs at the outfall, the storm drain system along the proposed alignment could be designed for the runoff which is allowed to move into the system at the reduced controlled rate. This drainage concept requires individual property owners to pond their storm water and release it at a specified rate. (give note)

The main line storm drain pipe sizes for this alternative range from 54-inch line adjacent to basin A1-D to 120-inch line at the basin outfall. Pipe sizes and slopes, key analysis points, and peak flow rates in the pipes are shown on Map No. 4. The construction cost estimate for Alternative 1B is \$6,322,863 and the detailed breakdown of the costs can be found in Appendix A-1. AHYMO summary tables for Alternative 1B are in Appendix B-2.

The advantages to this alternative are that private detention ponds can be designed to trap sediment and pollutants prior to reaching the storm drain system, and maintenance of a public detention pond facility would not be required.

M

5

rely on private development.

510 cfs

7.6 Alternative 1C

Alternative 1C proposes a basin management approach to storm water control. This alternative does not propose public detention ponding. The proposed peak discharge rate at the basin outfall point for Alternative 1C is 510 cfs. The sub-basin hydrographs in the base AHYMO model were reduced approximately 47 percent to achieve this discharge rate. This was accomplished by setting the bulking factor equal to 0.53 in the AHYMO base model. By reducing the AHYMO base flow to the required 510 cfs at the outfall, the storm drain system along the proposed alignment could be designed for the runoff which is allowed to move into the system at the reduced controlled rate. By reducing the peak flow by this percentage, the required storm drain pipe sizes are reduced, thereby reducing construction costs. Alternative 1C, as in Alternative 1B, would require individual property owners to pond their stormwater and release it at a specified rate. (Rate?)

The storm drain pipe sizes for this alternative range from 48-inch adjacent to basin A1-D to 108-inch at the basin outfall. It should be noted that this is the only option where certain branch storm drain lines can be reduced in size compared to other alternatives. This is the result of increasing the required on-site ponding. Pipe sizes and slopes, key analysis points, and peak discharges in the pipes are shown on Map No. 5. The construction cost estimate for Alternative 1C is \$5,007,635 with the detailed take-off presented in Appendix A-2. AHYMO summary tables for Alternative 1C are located in Appendix B-3.

The advantages to this alternative are similar to those of Alternative 1B with the exception that properties under Alternative 1C would have to detain more storm water than Alternative 1B.

7.7 Alternative 2A1

Alternative 2A1 is a storm drain system that includes ponding runoff in a COA owned and maintained detention basin. The base AHYMO model was modified to include a detention pond and full discharge was allowed. The pond site for Alternative 2A1 is an existing retention pond located immediately north of the Cedar Ridge residential subdivision, south of Fortuna Road. The pond is also adjacent (on the east) to a ninety foot drainage easement between Fortuna Road and Bluewater Road. The peak discharge at the storm drain outfall in this alternative is 516 cfs.

Currently, flows generated from Phase I and II of the Cedar Ridge residential subdivision drain to the existing retention pond. Phase I is fully constructed, Phase II is under construction, and there are plans for third phase of this subdivision. Flows generated from Phase III are proposed to drain into the future West Mesa Diversion storm drain in Fortuna Road. Existing easements and agreements for the pond indicate that it is a permanent public easement to be

used for retention of storm water runoff. Therefore, this site was chosen as a logical location for a permanent public detention pond that could accept flows from upstream developments and reduce the peak flows in the proposed storm drain system. The present size of the retention pond is smaller than the size required to detain the proposed volume of water reaching the pond in fully developed conditions. Therefore, the pond volume would have to be increased. This can be accomplished by enlarging the pond east into the 90-foot drainage easement. The proposed Cedar Ridge Detention Pond will fall under the jurisdiction of the State Engineer's Office because the volume is greater than ten acre feet with a ponding depth greater than ten feet. However, SEC has had discussions with the State Engineer's office and because the pond is depressed into the ground, the plans would not require approval from the State Engineer's Office.

By using the existing retention pond at the Cedar Ridge subdivision as a detention basin, the required pipe sizes downstream of this facility are reduced compared to the base model of Alternative 1A. This results in overall lower construction costs for the project. This proposed alternative would not require the purchase of any land for the pond because the existing pond is dedicated as public drainage easement and this scenario uses the existing ninety foot drainage easement on the east. Copies of these easements are in Appendix C.

for Cedar Ridge
The trunk line storm drain pipe sizes for this alternative range from 54-inch adjacent to basin A1-D to 108-inch at the basin outfall. Pipe sizes and slopes, key analysis points, and peak discharges in the pipes are shown on Map No. 6. The construction cost estimate for Alternative 2A1 is \$5,291,004 with a detailed takeoff located in appendix A-3. AHYMO summary tables for Alternative 2A1 are in Appendix B-4.

The advantages to this system are:

- ~~There are existing easements in place for required detention facilities~~ *here is existing ponding in place*
- Individual properties do not have to detain their storm water runoff
- Detention Pond Facilities can act as a surge pond for minor flows

The disadvantage of this system is that the proposed detention basin will require maintenance.

The Stage-Storage-Discharge data for the Cedar Ridge Detention Pond used in the model is presented in Appendix C. Below is a summary of data relative to the proposed Cedar Ridge Detention Pond.

- Peak inflow into pond = 560 cfs
- Peak pond outflow = 129 cfs
- Total runoff volume into pond = 40.2 ac.ft.
- Volume capacity of pond = 31.4 ac.ft.
- Maximum water elev. in pond = 5096.0 ft.
- Top of berm elevation = 5100.0 ft.

7.8 Alternative 2B1

Alternative 2B1 is a storm drain system that includes ponding runoff in a COA owned and maintained detention basin. The base AHYMO model was modified to include a detention pond and full discharge was allowed. The pond site for Alternative 2B1 is a portion of two tracts owned by American Furniture located on 64th Street directly across from West Mesa High School. The use of this detention basin in the storm drain system would produce a peak discharge of 461 cfs at the storm drain outfall.

The American Furniture property was chosen for its central location in the drainage area and would collect approximately half of the flow generated in the drainage basin. The utilization of the American Furniture Detention Pond reduces the required pipe sizes when compared to the base model Alternative 1A resulting in lower construction costs for the project. However, Alternative 2B1 will require the purchase of land in order to build the detention pond. The size of the land required for the basin would be 4.34 acres (450-feet x 420-feet). The main line storm drain pipe sizes for this alternative range from 54-inch adjacent to basin A1-D to 120-inch at the storm drain outfall. Pipe sizes and slopes, key analysis points, and peak discharges in the pipe are shown on Map No. 7. The construction cost estimate for Alternative 2B1 is \$5,519,416 and the detailed breakdown of costs can be found in appendix A-4. AHYMO summary tables for this alternative can be found in Appendix B-5. As was the case with Alternative 2A1, approval from the State Engineer's Office will not be required for the American Furniture Detention Pond.

The advantages to this system are that individual properties will not have to detain their storm water runoff and the detention pond facilities can act as a surge pond allowing minor flows to by-pass the basin, thus reducing the required maintenance. The disadvantages include the required purchase of land to build pond and maintenance of the pond.

The Stage-Storage-Discharge data for the American Furniture Detention Pond used in the model is presented in Appendix C. Below is a summary of data relative to the proposed American Furniture Detention Pond.

- Peak inflow into pond = 581 cfs
- Peak pond outflow = 113 cfs
- Total runoff volume into pond = 42.8 ac.ft.
- Volume capacity of pond = 34.4 ac.ft.
- Maximum water elev. in pond = 5095.3 ft.
- Top of berm elevation = 5099.0 ft.

7.9 Alternative 2B3

Alternative 2B3 proposes a storm drain system that involves public detention ponding of storm water runoff and the base AHYMO model was modified to include the detention pond. The pond site chosen for Alternative 2B3 is property owned by American Furniture located on 64th Street across from West Mesa High School. Alternative 2B3 is similar to Alternative 2B1 because they both use American Furniture land, however, Alternative 2A1 utilizes only a portion of the two tracts owned by American Furniture whereas Alternative 2A3 uses the entire two tracts for the ponding area. The peak discharge at the storm drain outfall for this alternative is 401 cfs.

The utilization of a larger detention pond reduces the required pipe sizes downstream of this facility as compared to the other alternatives. This alternative requires the purchase of land in order to build the detention facility. The size of the tract of land is approximately 10 acres (an area 1037-feet x 420-feet). The main line storm drain pipe sizes for this alternative range from 54-inch adjacent to basin A1-D to 84-inch at the storm drain outfall. Pipe sizes and slopes, key analysis points, and peak discharge rates in the pipes are shown on Map No. 8. The construction cost estimate for Alternative 2B3 is \$5,391,633 with details contained in appendix A-5. AHYMO summary tables for Alternative 2B1 can be found in Appendix B-6.

As was the case with Alternative 2A1 and 2B1, approval from the State Engineer's Office will not be required for the American Furniture Detention Pond. The major difference in this alternative compared to the other alternatives is that the larger American Furniture site will act as a surge pond for the I-40 Interceptor/West Bluff Outfall systems during peak flow with the system presented on Map No. 9.

The advantages to this system are that Individual properties will not have to detain their storm water runoff and the detention pond facilities can act as a surge pond allowing minor flows to by-pass the basin, thus reducing the required maintenance. The disadvantages include the required purchase of land to build pond and maintenance of the pond.

The Stage-Storage-Discharge data for the American Furniture Detention Pond used in this alternative is presented in Appendix C. Below is a summary of data relative to the proposed 10-acre American Furniture Detention Pond.

- Peak inflow into pond = 623cfs
- Peak pond outflow = 55 cfs
- Total runoff volume into pond = 46.0 ac.ft.
- Volume capacity of pond = 87.9 ac.ft.
- Maximum water elev. in pond = 5091.6 ft.
- Top of berm elevation = 5099.0 ft.

8. RIGHT OF WAY AND EASEMENT ACQUISITION

8.1 Right of Way and Easement Acquisition

All of the alternatives presented in this report will require an easement at the north end of 64th Street near Interstate 40. The easement is required to install the storm drain line from the north end of 64th Street to the NMSHTD Interstate 40 right-of-way. The area required is 4,470 square feet (0.10 acres) from Tract 265. Map No. 9 shows the required easement.

Alternatives 2B1 and 2B3 will require land acquisition to build the proposed detention ponds. The proposed detention pond presented in Alternative 2A1 should not require land acquisition. Land acquisition costs are included in Table 3 for each alternative.

8.2 New Mexico State Highway and Transportation Department Easement *or Permit*

The proposed location of a portion of the West Mesa Diversion storm drain system will require construction within the NMSHTD right-of-way along the south side of Interstate 40 between 64th Street and the twin 10-foot x 12-foot storm drain outfall. Map 9 shows the proposed storm drain alignment and required easement. The drainage easement would be approximately 30-feet x 765-feet (0.53 acres). A meeting with NMSHTD District 3 office should be arranged as soon as possible to determine if the proposed alignment and the required drainage easement are feasible.

Tracts 287 and 288 have permanent 60-foot wide drainage easements located within them. The proposed storm drain system will be placed in these easements and will connect to the outfall point.

9. RECOMMENDATIONS

have history
This drainage analysis presents alternative storm drainage systems to relieve the flooding problems that have plagued the studied drainage area for years. A construction and land acquisition cost summary of the alternatives is presented in Table 3 to aid in determining the best alternative to serve the drainage area and the COA. Each of the alternatives presented in this study are more cost effective than the free discharge Alternative 1A because they utilize some form of ponding that reduces the required storm drain pipe sizes, thereby reducing the construction costs.

Alternatives 1B and 1C incorporate basin management will work well to mitigate flooding in the area. Alternative 1C is less expensive than 1B but 1C will require individual property owners to utilize a substantial portion of their land as on-site detention ponds. This will reduce the amount of development in the area. The advantage to these two alternatives is that most of the sediment and pollutants in the storm water will drop out in the on-site ponds prior to reaching the storm drain system.

Alternatives 2A1, 2B1 and 2B3 incorporate public detention pond facilities resulting in cost effective storm drain systems. Alternative 2A1 is the least expensive of the three. The advantages to alternatives 2A1, 2B1 and 2B3 that individual property owners will not be required to pond storm water on-site and that the public detention facilities could be used as surge type facilities. The disadvantages include the maintenance of a public detention facility and that approximately half of the drainage basin will discharge to the West Bluff Outfall carrying sediment and pollutants.

The recommended alternatives are Alternative 1C and Alternative 2A1. The total estimated construction costs for each are comparable and they are the least expensive of all the alternatives studied. The estimated construction cost for Alternative 1C is \$5,009,870 and for Alternative 2A1 is \$5,293,239. The advantage to Alternative 1C is, because the pond is located further down the system than the pond in 2A1 more of the runoff will be routed through the pond. This will provide an opportunity to drop out sediment and pollutants from the runoff before being control discharged into the outfall portion of the storm drain.

The advantage to Alternative 2A1 is the proposed location of the Cedar Ridge Detention Pond. The land proposed to contain the pond is located in existing public easements and therefore, no land acquisition costs are required to implement this alternative resulting in a substantial cost savings to the City of Albuquerque.

*To be changed
for
John M. [unclear]*

10. REFERENCES

Albuquerque Metropolitan Arroyo Flood Control Authority, January 1994, "AHYMO Computer Program User's Manual."

City of Albuquerque, January 1993, "Development Process Manual, Section 22.2, Hydrology."

Soil Conservation Service, June 1977, "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico."

Miller, J.F., Frederick, R.H., and R.J. Tracey, "Precipitation-Frequency Atlas of the Western United States," NOAA Atlas 2, Vol. IV - New Mexico, National Oceanic and Atmospheric Administration

DVC Engineering, March 1994, "Amole Arroyo - Westgate Dam Drainage Management Plan."

Richard J. Heggen Water Resources Engineering, March 1994, "Sediment Issues in the Amole Basin."

Bohannon Huston, Inc., (Report Currently in Progress), "I-40 Interceptor Drainage Management Plan."

Andrews, Asbury & Robert, Inc., January 1987, "West Bluff Drainage Plan."

Federal Highway Administration, September 1985, "Hydraulic Design of Highway Culverts."

Scanlon & Associates, August 1990, "West Bluff Outfall, Phase II I-40 Storm Interceptor."

APPENDIX A

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COSTS

APPENDIX A-1

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 1B

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 1B**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	0910.06	18" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$12.45	\$18,675.00
2	0910.10	24" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$17.15	\$25,725.00
3	0910.20	42" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,850	\$41.20	\$76,220.00
4	0910.22	48" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,400	\$48.15	\$67,410.00
5	0910.24	54" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	3,550	\$64.25	\$228,087.50
6	0910.26	60" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	100	\$72.75	\$7,275.00
7	0910.28	66" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,900	\$90.45	\$171,855.00
8	0910.30	72" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	700	\$104.50	\$73,150.00
9	0910.34	84" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	600	\$130.90	\$78,540.00
10	0910.46	120" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	3,280	\$250.00	\$820,000.00
11	0910.XX	10'x6' Reinforced Concrete Box Section, furnish and install in open trench, cip.	LF	1,100	\$425.00	\$467,500.00
12	910.6X	Bend in 42" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$787.50	\$787.50
13	0910.66	Bend in 48" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$900.00	\$1,800.00
14	0910.67	Bend in 54" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,012.50	\$2,025.00
15	0910.68	Bend in 60" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,125.00	\$1,125.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 1B**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
16	0910.6X	Bend in 66" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,237.50	\$1,237.50
17	0910.69	Bend in 72" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,350.00	\$1,350.00
18	0910.71	Bend in 84" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,575.00	\$3,150.00
19	0910.77	Bend in 120" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$2,250.00	\$4,500.00
20	0910.XX	42"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	5	\$621.50	\$3,107.50
21	0910.XX	48"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
22	0910.XX	54"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
23	0910.XX	60"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
24	0910.XX	66"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	6	\$621.50	\$3,729.00
25	0910.XX	72"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
26	0910.XX	72"X60" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,852.50	\$1,852.50
27	0910.XX	120"X42" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,199.50	\$2,399.00
28	0910.XX	120"X48" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,381.50	\$2,763.00
29	0910.XX	120"X66" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$2,142.00	\$2,142.00
30	0910.XX	60"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$900.00	\$900.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 1B**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
31	0910.XX	66"X42" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,485.00	\$1,485.00
32	0910.XX	66"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$990.00	\$990.00
33	0910.XX	72"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
34	0910.XX	72"X66" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
35	0910.XX	84"X72" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,260.00	\$1,260.00
36	0915.01	Catch Basin, Type "A", cip.	EA	100	\$2,200.00	\$220,000.00
37	0920.1X	Reinforced Concrete Junction Box @ entrance to double 10'x12' CBC, cip.	EA	1	\$30,000.00	\$30,000.00
38	0920.1X	Reinforced Concrete Junction Box @ 64th St. and Fortuna, cip.	EA	1	\$20,000.00	\$20,000.00
39	0920.1X	Reinforced Concrete Junction Box @ 64th St. and Glenrio, cip.	EA	1	\$15,000.00	\$15,000.00
40	0920.1X	Tee Manhole, 4' Diameter, cip.	EA	50	\$2,200.00	\$110,000.00
41	0701.1X	Trenching, Backfilling and Compaction for 18" to 36" RCP, complete.	LF	3,000	\$28.00	\$84,000.00
42	0701.2X	Trenching, Backfilling and Compaction for 42" RCP, complete.	LF	1,850	\$30.90	\$57,165.00
43	0701.2X	Trenching, Backfilling and Compaction for 48" RCP, complete.	LF	1,400	\$36.11	\$50,557.50
44	0701.2X	Trenching, Backfilling and Compaction for 54" RCP, complete.	LF	3,550	\$48.19	\$171,065.63
45	0701.2X	Trenching, Backfilling and Compaction for 60" RCP, complete.	LF	100	\$54.56	\$5,456.25
46	0701.2X	Trenching, Backfilling and Compaction for 66" RCP, complete.	LF	1,900	\$67.84	\$128,891.25
47	0701.2X	Trenching, Backfilling and Compaction for 72" RCP, complete.	LF	700	\$78.38	\$54,862.50
48	0701.2X	Trenching, Backfilling and Compaction for 84" RCP, complete.	LF	600	\$98.18	\$58,905.00
49	0701.2X	Trenching, Backfilling and Compaction for 120" RCP, complete.	LF	3,280	\$187.50	\$615,000.00
50	0701.XX	Trenching, Backfilling and Compaction for 10'x6' RC Box Section, complete.	LF	1,100	\$180.00	\$198,000.00
51	0202.01	Dispose of excess excavation, complete.	CY	25,000	\$4.00	\$100,000.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 1B

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
52	0343.01	Existing Pavement, Asphalt Concrete, remove & dispose, Sawcut Not Required, any thickness, complete.	SY	45,000	\$4.00	\$180,000.00
53	03XX.XX	Asphalt Concrete Pavement to replace old pavement, cip.	SY	45,000	\$15.00	\$675,000.00
54	XXXX.XX	Removal and Relocation of existing utilities for storm drain installation, complete.	LS	1	\$200,000.00	\$200,000.00

Estimated Construction Cost Subtotal

\$5,058,290.63

25% Contingencies

\$1,264,572.66

Estimated Construction Cost

\$6,322,863.28

APPENDIX A-2

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 1C

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 1C

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	0910.06	18" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$12.45	\$18,675.00
2	0910.10	24" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$17.15	\$25,725.00
3	0910.18	36" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,650	\$33.00	\$87,450.00
4	0910.20	42" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,600	\$41.20	\$65,920.00
5	0910.22	48" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,750	\$48.15	\$132,412.50
6	0910.24	54" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	400	\$64.25	\$25,700.00
7	0910.26	60" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,150	\$72.75	\$156,412.50
8	0910.30	72" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	600	\$104.50	\$62,700.00
9	0910.36	90" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	900	\$158.80	\$142,920.00
10	0910.38	96" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,300	\$175.80	\$228,540.00
11	0910.42	108" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,200	\$215.00	\$473,000.00
12	0910.65	Bend in 36" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$675.00	\$1,350.00
13	910.6X	Bend in 42" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$787.50	\$787.50
14	0910.66	Bend in 48" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	4	\$900.00	\$3,600.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 1C**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
15	0910.68	Bend in 60" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,125.00	\$1,125.00
16	0910.69	Bend in 72" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,350.00	\$1,350.00
17	0910.72	Bend in 90" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,687.50	\$1,687.50
18	0910.75	Bend in 108" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$2,025.00	\$4,050.00
19	0910.XX	48"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	9	\$621.50	\$5,593.50
20	0910.XX	54"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
21	0910.XX	60"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	4	\$621.50	\$2,486.00
22	0910.XX	60"X48" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,381.50	\$1,381.50
23	0910.XX	90"X60" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,852.50	\$3,705.00
24	0910.XX	96"X48" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,381.50	\$1,381.50
25	0910.XX	108"X36" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,005.00	\$2,010.00
26	0910.XX	108"X42" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,199.50	\$2,399.00
27	0910.XX	54"X36" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$810.00	\$810.00
28	0910.XX	60"X48" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$900.00	\$900.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 1C

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
29	0910.XX	60"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$900.00	\$900.00
30	0910.XX	72"X60" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
31	0910.XX	90"X72" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,350.00	\$1,350.00
32	0910.XX	96"X90" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,440.00	\$1,440.00
33	0910.XX	108"X96" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,620.00	\$1,620.00
34	0915.01	Catch Basin, Type "A", cip.	EA	50	\$2,200.00	\$110,000.00
35	0920.1X	Reinforced Concrete Junction Box @ entrance to double 10'x12' CBC, cip.	EA	1	\$30,000.00	\$30,000.00
36	0920.1X	Tee Manhole, 4' Diameter, cip.	EA	40	\$2,200.00	\$88,000.00
37	0920.14	Manhole, 6' Dia., Type "C", cip.	EA	15	\$2,500.00	\$37,500.00
38	0701.1X	Trenching, Backfilling and Compaction for 18" to 36" RCP, complete.	LF	5,650	\$28.00	\$158,200.00
39	0701.2X	Trenching, Backfilling and Compaction for 42" RCP, complete.	LF	1,600	\$30.90	\$49,440.00
40	0701.2X	Trenching, Backfilling and Compaction for 48" RCP, complete.	LF	2,750	\$36.11	\$99,309.38
41	0701.2X	Trenching, Backfilling and Compaction for 54" RCP, complete.	LF	400	\$48.19	\$19,275.00
42	0701.2X	Trenching, Backfilling and Compaction for 60" RCP, complete.	LF	2,150	\$54.56	\$117,309.38
43	0701.2X	Trenching, Backfilling and Compaction for 72" RCP, complete.	LF	600	\$78.38	\$47,025.00
44	0701.2X	Trenching, Backfilling and Compaction for 90" RCP, complete.	LF	900	\$119.10	\$107,190.00
45	0701.2X	Trenching, Backfilling and Compaction for 96" RCP, complete.	LF	1,300	\$131.85	\$171,405.00
46	0701.2X	Trenching, Backfilling and Compaction for 108" RCP, complete.	LF	2,200	\$161.25	\$354,750.00
47	0202.01	Dispose of excess excavation, complete.	CY	25,000	\$4.00	\$100,000.00
48	0343.01	Existing Pavement, Asphalt Concrete, remove & dispose, Sawcut Not Required, any thickness, complete.	SY	45,000	\$4.00	\$180,000.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 1C

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
49	03XX.XX	Asphalt Concrete Pavement to replace old pavement, cip.	SY	45,000	\$15.00	\$675,000.00
50	XXXX.XX	Removal and Relocation of existing utilities for storm drain installation, complete.	LS	1	\$200,000.00	\$200,000.00

Estimated Construction Cost Subtotal	\$4,006,108.25
25% Contingencies	\$1,001,527.06
Estimated Construction Cost	\$5,007,635.31

APPENDIX A-3

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2A1

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2A1**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	0910.06	18" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$12.45	\$18,675.00
2	0910.10	24" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$17.15	\$25,725.00
3	0910.20	42" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,050	\$41.20	\$84,460.00
4	0910.22	48" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,400	\$48.15	\$67,410.00
5	0910.24	54" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	3,550	\$64.25	\$228,087.50
6	0910.26	60" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	100	\$72.75	\$7,275.00
7	0910.28	66" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,600	\$90.45	\$144,720.00
8	0910.30	72" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,850	\$104.50	\$193,325.00
9	0910.36	90" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,100	\$158.80	\$174,680.00
10	0910.42	108" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,200	\$215.00	\$473,000.00
11	910.6X	Bend in 42" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$787.50	\$787.50
12	0910.66	Bend in 48" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$900.00	\$1,800.00
13	0910.67	Bend in 54" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,012.50	\$2,025.00
14	0910.68	Bend in 60" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,125.00	\$1,125.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2A1**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
15	0910.6X	Bend in 66" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,237.50	\$2,475.00
16	0910.69	Bend in 72" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,350.00	\$2,700.00
17	0910.75	Bend in 108" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$2,025.00	\$4,050.00
18	0910.XX	42"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	5	\$621.50	\$3,107.50
19	0910.XX	48"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
20	0910.XX	54"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
21	0910.XX	60"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
22	0910.XX	66"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	6	\$621.50	\$3,729.00
23	0910.XX	72"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
24	0910.XX	72"X60" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,852.50	\$1,852.50
25	0910.XX	90"X66" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$2,142.00	\$2,142.00
26	0910.XX	108"X42" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,199.50	\$2,399.00
27	0910.XX	108"X48" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,381.50	\$2,763.00
28	0910.XX	60"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$900.00	\$900.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2A1**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
29	0910.XX	66"X42" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,485.00	\$1,485.00
30	0910.XX	66"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$990.00	\$990.00
31	0910.XX	72"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
32	0910.XX	72"X66" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	2	\$1,080.00	\$2,160.00
33	0910.XX	90"X72" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,350.00	\$1,350.00
34	0910.XX	108"X90" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,620.00	\$1,620.00
35	0915.01	Catch Basin, Type "A", cip.	EA	100	\$2,200.00	\$220,000.00
36	0920.1X	Reinforced Concrete Junction Box @ entrance to double 10'x12' CBC, cip.	EA	1	\$30,000.00	\$30,000.00
37	0920.1X	Tee Manhole, 4' Diameter, cip.	EA	50	\$2,200.00	\$110,000.00
38	0920.1X	Inlet & Outlet Structures for Detention Pond, cip.	LS	1	\$35,000.00	\$35,000.00
39	0701.1X	Trenching, Backfilling and Compaction for 18" to 36" RCP, complete.	LF	3,000	\$28.00	\$84,000.00
40	0701.2X	Trenching, Backfilling and Compaction for 42" RCP, complete.	LF	2,050	\$30.90	\$63,345.00
41	0701.2X	Trenching, Backfilling and Compaction for 48" RCP, complete.	LF	1,400	\$36.11	\$50,557.50
42	0701.2X	Trenching, Backfilling and Compaction for 54" RCP, complete.	LF	3,550	\$48.19	\$171,065.63
43	0701.2X	Trenching, Backfilling and Compaction for 60" RCP, complete.	LF	100	\$54.56	\$5,456.25
44	0701.2X	Trenching, Backfilling and Compaction for 66" RCP, complete.	LF	1,600	\$67.84	\$108,540.00
45	0701.2X	Trenching, Backfilling and Compaction for 72" RCP, complete.	LF	1,850	\$78.38	\$144,993.75
46	0701.2X	Trenching, Backfilling and Compaction for 90" RCP, complete.	LF	1,100	\$119.10	\$131,010.00
47	0701.2X	Trenching, Backfilling and Compaction for 108" RCP, complete.	LF	2,200	\$161.25	\$354,750.00
48	0202.01	Dispose of excess excavation, complete.	CY	50,000	\$4.00	\$200,000.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2A1

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
49	0343.01	Existing Pavement, Asphalt Concrete, remove & dispose, Sawcut Not Required, any thickness, complete.	SY	45,000	\$4.00	\$180,000.00
50	03XX.XX	Asphalt Concrete Pavement to replace old pavement, cip.	SY	45,000	\$15.00	\$675,000.00
51	XXXX.XX	Removal and Relocation of existing utilities for storm drain installation, complete.	LS	1	\$200,000.00	\$200,000.00

Estimated Construction Cost Subtotal

\$4,232,803.13

25% Contingencies

\$1,058,200.78

Estimated Construction Cost

\$5,291,003.91

APPENDIX A-4

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2B1

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2B1**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	0910.06	18" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$12.45	\$18,675.00
2	0910.10	24" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$17.15	\$25,725.00
3	0910.20	42" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,050	\$41.20	\$84,460.00
4	0910.22	48" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,400	\$48.15	\$67,410.00
5	0910.24	54" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	3,550	\$64.25	\$228,087.50
6	0910.26	60" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	100	\$72.75	\$7,275.00
7	0910.28	66" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,900	\$90.45	\$171,855.00
8	0910.30	72" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,400	\$104.50	\$146,300.00
9	0910.34	84" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,625	\$130.90	\$212,712.50
10	0910.42	108" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	2,430	\$215.00	\$522,450.00
11	910.6X	Bend in 42" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$787.50	\$787.50
12	0910.66	Bend in 48" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$900.00	\$1,800.00
13	0910.67	Bend in 54" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,012.50	\$2,025.00
14	0910.68	Bend in 60" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,125.00	\$1,125.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2B1**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
15	0910.6X	Bend in 66" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,237.50	\$1,237.50
16	0910.69	Bend in 72" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,350.00	\$2,700.00
17	0910.75	Bend in 108" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	3	\$2,025.00	\$6,075.00
18	0910.XX	42"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	5	\$621.50	\$3,107.50
19	0910.XX	48"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
20	0910.XX	54"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
21	0910.XX	60"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
22	0910.XX	66"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	6	\$621.50	\$3,729.00
23	0910.XX	72"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
24	0910.XX	72"X60" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,852.50	\$1,852.50
25	0910.XX	84"X66" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$2,142.00	\$2,142.00
26	0910.XX	108"X42" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,199.50	\$2,399.00
27	0910.XX	108"X48" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,381.50	\$2,763.00
28	0910.XX	108"X72" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$2,395.00	\$2,395.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2B1**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
29	0910.XX	60"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$900.00	\$900.00
30	0910.XX	66"X42" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,485.00	\$1,485.00
31	0910.XX	66"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$990.00	\$990.00
32	0910.XX	72"X42" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,620.00	\$1,620.00
33	0910.XX	72"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
34	0910.XX	72"X66" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
35	0910.XX	84"X72" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,260.00	\$1,260.00
36	0910.XX	108"X84" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$2,430.00	\$2,430.00
37	0915.01	Catch Basin, Type "A", cip.	EA	100	\$2,200.00	\$220,000.00
38	0920.1X	Reinforced Concrete Junction Box @ entrance to double 10'x12' CBC, cip.	EA	1	\$30,000.00	\$30,000.00
39	0920.1X	Tee Manhole, 4' Diameter, cip.	EA	50	\$2,200.00	\$110,000.00
40	0920.1X	Inlet & Outlet Structures for Detention Pond, cip.	LS	1	\$35,000.00	\$35,000.00
41	0701.1X	Trenching, Backfilling and Compaction for 18" to 36" RCP, complete.	LF	3,000	\$28.00	\$84,000.00
42	0701.2X	Trenching, Backfilling and Compaction for 42" RCP, complete.	LF	2,050	\$30.90	\$63,345.00
43	0701.2X	Trenching, Backfilling and Compaction for 48" RCP, complete.	LF	1,400	\$36.11	\$50,557.50
44	0701.2X	Trenching, Backfilling and Compaction for 54" RCP, complete.	LF	3,550	\$48.19	\$171,065.63
45	0701.2X	Trenching, Backfilling and Compaction for 60" RCP, complete.	LF	100	\$54.56	\$5,456.25
46	0701.2X	Trenching, Backfilling and Compaction for 66" RCP, complete.	LF	1,900	\$67.84	\$128,891.25

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2B1

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
47	0701.2X	Trenching, Backfilling and Compaction for 72" RCP, complete.	LF	1,400	\$78.38	\$109,725.00
48	0701.2X	Trenching, Backfilling and Compaction for 84" RCP, complete.	LF	1,625	\$98.18	\$159,534.38
49	0701.2X	Trenching, Backfilling and Compaction for 108" RCP, complete.	LF	2,430	\$161.25	\$391,837.50
50	0202.01	Dispose of excess excavation, complete.	CY	65,000	\$4.00	\$260,000.00
51	0343.01	Existing Pavement, Asphalt Concrete, remove & dispose, Sawcut Not Required, any thickness, complete.	SY	45,000	\$4.00	\$180,000.00
52	03XX.XX	Asphalt Concrete Pavement to replace old pavement, cip.	SY	45,000	\$15.00	\$675,000.00
53	XXXX.XX	Removal and Relocation of existing utilities for storm drain installation, complete.	LS	1	\$200,000.00	\$200,000.00

Estimated Construction Cost Subtotal

\$4,415,532.50

25% Contingencies

\$1,103,883.13

Estimated Construction Cost

\$5,519,415.63

APPENDIX A-5

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2B3

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2B3**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	0910.06	18" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$12.45	\$18,675.00
2	0910.10	24" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,500	\$17.15	\$25,725.00
3	0910.14	30" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	200	\$23.15	\$4,630.00
4	0910.20	42" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,850	\$41.20	\$76,220.00
5	0910.22	48" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,400	\$48.15	\$67,410.00
6	0910.24	54" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	3,550	\$64.25	\$228,087.50
7	0910.26	60" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	100	\$72.75	\$7,275.00
8	0910.28	66" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	1,900	\$90.45	\$171,855.00
9	0910.30	72" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	650	\$104.50	\$67,925.00
10	0910.34	84" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	3,900	\$130.90	\$510,510.00
11	0910.42	108" Reinforced Concrete Pipe, Class IV, furnish and install in open trench, cip.	LF	250	\$215.00	\$53,750.00
12	910.6X	Bend in 42" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$787.50	\$787.50
13	0910.66	Bend in 48" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$900.00	\$1,800.00
14	0910.67	Bend in 54" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,012.50	\$2,025.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS**ESTIMATED CONSTRUCTION COST****ALTERNATIVE 2B3**

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
15	0910.68	Bend in 60" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,125.00	\$1,125.00
16	0910.6X	Bend in 66" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	1	\$1,237.50	\$1,237.50
17	0910.69	Bend in 72" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	2	\$1,350.00	\$2,700.00
18	0910.71	Bend in 84" Reinforced Concrete Pipe, any degree, furnish and install in open trench, cip.	EA	4	\$1,575.00	\$6,300.00
19	0910.XX	42"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	5	\$621.50	\$3,107.50
20	0910.XX	48"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
21	0910.XX	54"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	7	\$621.50	\$4,350.50
22	0910.XX	60"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
23	0910.XX	66"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	6	\$621.50	\$3,729.00
24	0910.XX	72"X24" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$621.50	\$1,243.00
25	0910.XX	72"X60" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,852.50	\$1,852.50
26	0910.XX	84"X42" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$1,199.50	\$1,199.50
27	0910.XX	84"X48" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	2	\$1,381.50	\$2,763.00
28	0910.XX	84"X66" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$2,142.00	\$2,142.00

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2B3

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
29	0910.XX	84"X72" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$2,395.00	\$2,395.00
30	0910.XX	60"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$900.00	\$900.00
31	0910.XX	66"X42" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,485.00	\$1,485.00
32	0910.XX	66"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$990.00	\$990.00
33	0910.XX	72"X54" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
34	0910.XX	72"X66" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,080.00	\$1,080.00
35	0910.XX	84"X30" Reinforced Concrete Pipe Wye or Tee, furnish and install in open trench, cip.	EA	1	\$794.00	\$794.00
36	0910.XX	84"X72" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$1,260.00	\$1,260.00
37	0910.XX	108"X84" Reinforced Concrete Pipe Reducer, furnish and install in open trench, cip.	EA	1	\$2,430.00	\$2,430.00
38	0915.01	Catch Basin, Type "A", cip.	EA	100	\$2,200.00	\$220,000.00
39	0920.1X	Reinforced Concrete Junction Box @ entrance to double 10'x12' CBC, cip.	EA	1	\$30,000.00	\$30,000.00
40	0920.1X	Tee Manhole, 4' Diameter, cip.	EA	50	\$2,200.00	\$110,000.00
41	0920.1X	Inlet & Outlet Structures for Detention Pond, cip.	LS	1	\$35,000.00	\$35,000.00
42	0701.1X	Trenching, Backfilling and Compaction for 18" to 36" RCP, complete.	LF	3,200	\$28.00	\$89,600.00
43	0701.2X	Trenching, Backfilling and Compaction for 42" RCP, complete.	LF	1,850	\$30.90	\$57,165.00
44	0701.2X	Trenching, Backfilling and Compaction for 48" RCP, complete.	LF	1,400	\$36.11	\$50,557.50
45	0701.2X	Trenching, Backfilling and Compaction for 54" RCP, complete.	LF	3,550	\$48.19	\$171,065.63
46	0701.2X	Trenching, Backfilling and Compaction for 60" RCP, complete.	LF	100	\$54.56	\$5,456.25

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS

ESTIMATED CONSTRUCTION COST

ALTERNATIVE 2B3

BID ITEM NUMBER	SPEC. ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
47	0701.2X	Trenching, Backfilling and Compaction for 66" RCP, complete.	LF	1,900	\$67.84	\$128,891.25
48	0701.2X	Trenching, Backfilling and Compaction for 72" RCP, complete.	LF	650	\$78.38	\$50,943.75
49	0701.2X	Trenching, Backfilling and Compaction for 84" RCP, complete.	LF	3,900	\$98.18	\$382,882.50
50	0701.2X	Trenching, Backfilling and Compaction for 108" RCP, complete.	LF	250	\$161.25	\$40,312.50
51	0202.01	Dispose of excess excavation, complete.	CY	150,000	\$4.00	\$600,000.00
52	0343.01	Existing Pavement, Asphalt Concrete, remove & dispose, Sawcut Not Required, any thickness, complete.	SY	45,000	\$4.00	\$180,000.00
53	03XX.XX	Asphalt Concrete Pavement to replace old pavement, cip.	SY	45,000	\$15.00	\$675,000.00
54	XXXX.XX	Removal and Relocation of existing utilities for storm drain installation, complete.	LS	1	\$200,000.00	\$200,000.00

Estimated Construction Cost Subtotal

\$4,313,306.38

25% Contingencies

\$1,078,326.59

Estimated Construction Cost

\$5,391,632.97

APPENDIX B

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

APPENDIX B-1

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

BASE MODEL

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - BASE MODEL
10-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1A106.IN

RUN DATE (MON/DAY/YR) =12/18/1996
USER NO. = C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.90	3.649	1.06251	1.833	1.332	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.46	3.642	1.06033	1.866	1.321	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.93	1.181	1.16584	1.567	2.215	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.660	1.06251	1.500	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.88	1.653	1.05749	1.533	2.393	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.53	1.048	1.06251	1.667	1.650	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.53	2.701	1.05941	1.567	1.946	
ADD HYD	PART AP-5	70&88	5	.06680	86.46	3.882	1.08968	1.567	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.19	7.524	1.07527	1.667	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.91	7.519	1.07450	1.667	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	2.600	.95918	1.600	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.74	10.118	1.04229	1.633	1.388	
ROUTE MCUNGE	AP-7.R	3	4	.18202	159.93	10.103	1.04067	1.667	1.373	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	.900	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	175.12	11.003	1.03348	1.633	1.371	
ROUTE MCUNGE	AP-9.R	26	27	.19962	174.10	10.997	1.03289	1.633	1.363	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	.992	1.06251	1.667	1.689	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	192.56	11.988	1.03527	1.633	1.386	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.83	2.577	.38351	1.800	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	1.932	.28743	3.333	.025	AC-FT= 2.157
ROUTE	AP-11.R	2	4	.12600	2.02	1.907	.28379	3.800	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.32	.990	.38351	1.533	.882	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.32	2.897	.31146	1.533	.245	
ROUTE	AP-12.R	5	6	.17440	22.54	2.885	.31014	1.600	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	1.954	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.66	4.839	.42676	1.533	.549	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.44	4.834	.42629	1.533	.547	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.01	1.738	.82484	1.567	1.741	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.06	6.571	.48874	1.533	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.00	6.561	.48799	1.567	.725	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.13	.271	.30818	1.700	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.92	6.832	.47694	1.567	.703	
ROUTE MCUNGE	AP-15.R	9	10	.26860	115.04	6.813	.47560	1.600	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.74	.946	.95918	1.567	1.836	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.77	7.759	.50676	1.600	.744	
ADD HYD	AP-17	91&30	11	.50422	327.19	19.748	.73434	1.633	1.014	
ROUTE MCUNGE	AP-17.R	11	12	.50422	325.74	19.733	.73381	1.633	1.009	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.60	1.312	.75251	1.733	1.080	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	345.50	21.046	.73494	1.633	1.005	
ROUTE MCUNGE	AP-19.R	40	41	.53692	341.45	21.019	.73403	1.667	.994	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.184	.75251	1.733	1.060	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	360.10	22.203	.73499	1.667	.993	
ROUTE MCUNGE	AP-21.R	43	44	.56642	359.13	22.189	.73450	1.667	.991	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	31.29	1.642	1.16584	1.667	1.852	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	390.42	23.830	.75371	1.667	1.029	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.74	.404	.84406	1.567	1.697	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.70	.404	.84474	1.633	1.690	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.767	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.74	1.171	.91633	1.533	1.808	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.44	1.166	.91205	1.667	1.724	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.55	1.888	.95918	1.500	2.268	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	63.51	3.054	.94061	1.533	1.630	
ROUTE MCUNGE	AP-25.R	51	52	.06087	62.07	3.045	.93807	1.600	1.593	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	28.35	1.192	.95918	1.567	1.901	PER IMP= 70.00

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WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - BASE MODEL
10-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 1A1024.IN

RUN DATE (MON/DAY/YR) = 12/18/1996
 USER NO. = C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.90	4.330	1.26057	1.833	1.332	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.46	4.318	1.25717	1.866	1.321	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.93	1.411	1.39271	1.567	2.215	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.977	1.26546	1.500	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.88	1.968	1.25921	1.533	2.393	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.53	1.246	1.26265	1.667	1.650	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.53	3.214	1.26054	1.567	1.946	
ADD HYD	PART AP-5	70&88	5	.06680	86.46	4.625	1.29814	1.567	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.19	8.943	1.27803	1.667	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.91	8.933	1.27662	1.667	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	3.077	1.13533	1.600	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.74	12.010	1.23717	1.633	1.388	
ROUTE MCUNGE	AP-7.R	3	4	.18202	159.93	11.988	1.23494	1.667	1.373	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	1.067	1.13676	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	175.12	13.056	1.22629	1.633	1.371	
ROUTE MCUNGE	AP-9.R	26	27	.19962	174.10	13.044	1.22524	1.633	1.363	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	1.179	1.26282	1.667	1.689	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	192.56	14.223	1.22827	1.633	1.386	
COMPUTE NM HYD	I400-1	-	1	.12600	37.83	2.994	.44547	1.800	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	2.103	.31301	3.333	.025	AC-FT= 2.157
ROUTE	AP-11.R	2	4	.12600	2.02	2.072	.30836	3.800	.025	
COMPUTE NM HYD	I400-2	-	1	.04840	27.32	1.153	.44685	1.533	.882	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.32	3.226	.34680	1.533	.245	
ROUTE	AP-12.R	5	6	.17440	22.54	3.209	.34502	1.600	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	2.316	1.13676	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.66	5.525	.48728	1.533	.549	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.44	5.517	.48656	1.533	.547	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.01	2.041	.96889	1.567	1.741	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.06	7.558	.56214	1.533	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.00	7.545	.56115	1.567	.725	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.13	.287	.32570	1.700	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.92	7.831	.54668	1.567	.703	
ROUTE MCUNGE	AP-15.R	9	10	.26860	115.04	7.805	.54484	1.600	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.74	1.120	1.13563	1.567	1.836	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.77	8.926	.58291	1.600	.744	
ADD HYD	AP-17	91&30	11	.50422	327.19	23.149	.86081	1.633	1.014	
ROUTE MCUNGE	AP-17.R	11	12	.50422	325.74	23.127	.86002	1.633	1.009	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.60	1.530	.87717	1.733	1.080	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	345.50	24.657	.86106	1.633	1.005	
ROUTE MCUNGE	AP-19.R	40	41	.53692	341.45	24.620	.85975	1.667	.994	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.380	.87706	1.733	1.060	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	360.10	26.000	.86065	1.667	.993	
ROUTE MCUNGE	AP-21.R	43	44	.56642	359.13	25.980	.86000	1.667	.991	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	31.29	1.959	1.39118	1.667	1.852	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	390.42	27.939	.88366	1.667	1.029	
COMPUTE NM HYD	I400-3&AP-23	-	45	.00897	9.74	.481	1.00567	1.567	1.697	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.70	.481	1.00447	1.633	1.690	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.909	1.13677	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.74	1.390	1.08726	1.533	1.808	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.44	1.381	1.08050	1.667	1.724	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.55	2.237	1.13666	1.500	2.268	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	63.51	3.618	1.11455	1.533	1.630	
ROUTE MCUNGE	AP-25.R	51	52	.06087	62.07	3.607	1.11095	1.600	1.593	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	28.35	1.411	1.13578	1.567	1.901	PER IMP= 70.00
ADD HYD	AP-26	53&52	54	.08417	89.80	5.018	1.11783	1.600	1.667	

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - BASE MODEL
100-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1A1006.in

RUN DATE (MON/DAY/YR) =12/31/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.210
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.83	6.047	1.76067	1.800	2.131	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	- 1	2	.06440	86.00	6.026	1.75439	1.866	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.86	1.918	1.89314	1.567	3.442	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	2.751	1.76067	1.500	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.27	2.732	1.74833	1.533	3.747	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.19	1.737	1.76067	1.667	2.634	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.55	4.469	1.75309	1.567	3.058	
ADD HYD	PART AP-5	70&88	5	.06680	135.42	6.388	1.79292	1.567	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.83	12.413	1.77401	1.633	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.68	12.388	1.77039	1.667	2.045	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.34	4.413	1.62821	1.600	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.48	16.801	1.73069	1.633	2.245	
ROUTE MCUNGE	AP-7.R	3	4	.18202	256.97	16.766	1.72705	1.667	2.206	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.528	1.62821	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	282.31	18.294	1.71833	1.633	2.210	
ROUTE MCUNGE	AP-9.R	26	27	.19962	279.54	18.266	1.71574	1.633	2.188	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.643	1.76067	1.667	2.694	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	309.09	19.910	1.71936	1.633	2.224	
COMPUTE NM HYD	I40D-1	-	1	.12600	81.66	5.738	.85383	1.800	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.315	.64217	3.400	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.273	.63581	3.666	.060	
COMPUTE NM HYD	I40D-2	-	1	.04840	61.91	2.204	.85383	1.533	1.999	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.93	6.477	.69631	1.533	.555	
ROUTE	AP-12.R	5	6	.17440	56.29	6.455	.69398	1.567	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.31	3.317	1.62821	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.03	9.772	.86184	1.533	1.036	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.56	9.763	.86100	1.567	1.026	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.12	3.067	1.45600	1.567	2.972	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	214.69	12.830	.95423	1.567	1.331	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.72	12.788	.95112	1.567	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.698	.79367	1.700	1.247	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.80	13.487	.94145	1.567	1.279	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.22	13.387	.93449	1.600	1.194	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.606	1.62820	1.567	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.72	14.993	.97919	1.600	1.310	
ADD HYD	AP-17	91&30	11	.50422	547.08	34.903	1.29791	1.633	1.695	
ROUTE MCUNGE	AP-17.R	11	12	.50422	541.81	34.840	1.29556	1.633	1.679	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.74	2.378	1.36328	1.733	1.899	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	576.95	37.217	1.29968	1.633	1.679	
ROUTE MCUNGE	AP-19.R	40	41	.53692	562.22	37.080	1.29488	1.667	1.636	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.19	2.145	1.36328	1.733	1.864	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	595.21	39.225	1.29844	1.667	1.642	
ROUTE MCUNGE	AP-21.R	43	44	.56642	589.95	39.152	1.29604	1.667	1.627	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	48.79	2.666	1.89314	1.667	2.888	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	638.74	41.818	1.32263	1.667	1.684	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	16.28	.700	1.46315	1.567	2.835	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.18	.699	1.46154	1.633	2.819	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.303	1.62821	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.58	2.002	1.56582	1.533	3.036	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.25	2.001	1.56558	1.600	3.015	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.45	3.204	1.62821	1.500	3.703	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	127.55	5.206	1.60353	1.533	3.274	
ROUTE MCUNGE	AP-25.R	51	52	.06087	114.20	5.137	1.58225	1.567	2.931	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	46.30	2.023	1.62821	1.567	3.105	PER IMP= 70.00

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - BASE MODEL
100-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1A10024.in

RUN DATE (MON/DAY/YR) =12/31/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.83	7.068	2.05793	1.800	2.131	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.00	7.041	2.04993	1.866	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.86	2.263	2.23364	1.567	3.442	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	3.227	2.06528	1.500	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.27	3.205	2.05111	1.533	3.747	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.19	2.034	2.06105	1.667	2.634	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.55	5.239	2.05495	1.567	3.058	
ADD HYD	PART AP-5	70&88	5	.06680	135.42	7.502	2.10578	1.567	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.83	14.543	2.07836	1.633	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.68	14.511	2.07385	1.667	2.045	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.34	5.130	1.89259	1.600	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.48	19.641	2.02324	1.633	2.245	
ROUTE MCUNGE	AP-7.R	3	4	.18202	256.97	19.597	2.01872	1.667	2.206	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.779	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	282.31	21.376	2.00779	1.633	2.210	
ROUTE MCUNGE	AP-9.R	26	27	.19962	279.54	21.342	2.00462	1.633	2.188	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.924	2.06130	1.667	2.694	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	309.09	23.266	2.00919	1.633	2.224	
COMPUTE NM HYD	I400-1	-	1	.12600	81.66	6.363	.94687	1.800	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.574	.68061	3.400	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.522	.67299	3.666	.060	
COMPUTE NM HYD	I400-2	-	1	.04840	61.91	2.449	.94889	1.533	1.999	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.93	6.972	.74956	1.533	.555	
ROUTE	AP-12.R	5	6	.17440	56.29	6.945	.74665	1.567	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.31	3.860	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.03	10.805	.95294	1.533	1.036	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.56	10.792	.95178	1.567	1.026	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.12	3.523	1.67219	1.567	2.972	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	214.69	14.315	1.06466	1.567	1.331	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.72	14.269	1.06127	1.567	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.722	.81997	1.700	1.247	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.80	14.991	1.04645	1.567	1.279	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.22	14.882	1.03885	1.600	1.194	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.868	1.89304	1.567	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.72	16.750	1.09389	1.600	1.310	
ADD HYD	AP-17	91&30	11	.50422	547.08	40.016	1.48802	1.633	1.695	
ROUTE MCUNGE	AP-17.R	11	12	.50422	541.81	39.945	1.48539	1.633	1.679	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.74	2.704	1.55037	1.733	1.899	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	576.95	42.648	1.48934	1.633	1.679	
ROUTE MCUNGE	AP-19.R	40	41	.53692	562.22	42.497	1.48405	1.667	1.636	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.19	2.439	1.55021	1.733	1.864	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	595.21	44.936	1.48750	1.667	1.642	
ROUTE MCUNGE	AP-21.R	43	44	.56642	589.95	44.858	1.48490	1.667	1.627	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	48.79	3.142	2.23134	1.667	2.888	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	638.74	47.999	1.51814	1.667	1.684	
COMPUTE NM HYD	I400-3&AP-23	-	45	.00897	16.28	.816	1.70570	1.567	2.835	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.18	.814	1.70175	1.633	2.819	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.516	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.58	2.330	1.82252	1.533	3.036	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.25	2.326	1.81956	1.600	3.015	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.45	3.729	1.89459	1.500	3.703	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	127.55	6.055	1.86505	1.533	3.274	
ROUTE MCUNGE	AP-25.R	51	52	.06087	114.20	5.980	1.84214	1.567	2.931	CCODE = .2

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APPENDIX B-2

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

ALTERNATIVE 1B

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 1B
10-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1B106.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
SEDIMENT BULK										PK BF = .84
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	44.99	2.991	.87074	1.833	1.092	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	44.67	2.987	.86963	1.866	1.084	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	22.07	.968	.95542	1.567	1.815	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	39.37	1.361	.87074	1.500	2.099	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	36.85	1.358	.86929	1.567	1.965	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	16.01	.859	.87074	1.667	1.352	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	49.03	2.217	.86983	1.567	1.603	
ADD HYD	PART AP-5	70&88	5	.06680	71.10	3.186	.89417	1.567	1.663	
ADD HYD	AP-5	5& 2	89	.13120	87.72	6.172	.88212	1.633	1.045	
ROUTE MCUNGE	AP-5.R	89	2	.13120	87.57	6.172	.88206	1.667	1.043	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	46.79	2.131	.78606	1.600	1.439	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	132.63	8.303	.85525	1.633	1.139	
ROUTE MCUNGE	AP-7.R	3	4	.18202	131.21	8.291	.85407	1.667	1.126	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	21.59	.738	.78606	1.500	1.917	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	143.70	9.029	.84807	1.633	1.125	
ROUTE MCUNGE	AP-9.R	26	27	.19962	142.87	9.022	.84744	1.633	1.118	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	15.51	.813	.87074	1.667	1.385	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	158.00	9.835	.84931	1.633	1.137	
COMPUTE NM HYD	I40D-1	-	1	.12600	31.00	2.112	.31429	1.800	.384	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	1.67	1.583	.23555	3.333	.021	AC-FT= 1.768
ROUTE	AP-11.R	2	4	.12600	1.65	1.562	.23247	3.833	.021	
COMPUTE NM HYD	I40D-2	-	1	.04840	22.39	.811	.31429	1.533	.723	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	22.39	2.373	.25517	1.533	.201	
ROUTE	AP-12.R	5	6	.17440	18.24	2.363	.25402	1.600	.163	
COMPUTE NM HYD	C4-D	-	1	.03820	46.86	1.601	.78606	1.500	1.917	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	60.76	3.964	.34962	1.533	.447	
ROUTE MCUNGE	AP-13.R	4	6	.21260	60.64	3.963	.34948	1.533	.446	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	36.07	1.424	.67597	1.567	1.427	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	96.39	5.387	.40063	1.533	.597	
ROUTE MCUNGE	AP-14.R	7	8	.25210	95.63	5.374	.39973	1.567	.593	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	4.20	.222	.25256	1.700	.398	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	98.83	5.597	.39069	1.567	.575	
ROUTE MCUNGE	AP-15.R	9	10	.26860	94.07	5.571	.38888	1.600	.547	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	17.82	.776	.78606	1.567	1.505	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	111.88	6.346	.41447	1.600	.609	
ADD HYD	AP-17	91&30	11	.50422	268.69	16.181	.60171	1.633	.833	
ROUTE MCUNGE	AP-17.R	11	12	.50422	267.47	16.170	.60129	1.633	.829	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	18.52	1.076	.61669	1.733	.885	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	283.66	17.245	.60223	1.633	.825	
ROUTE MCUNGE	AP-19.R	40	41	.53692	280.79	17.222	.60143	1.667	.817	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	16.39	.970	.61669	1.733	.868	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	296.07	18.193	.60223	1.667	.817	
ROUTE MCUNGE	AP-21.R	43	44	.56642	295.39	18.183	.60190	1.667	.815	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	25.64	1.345	.95542	1.667	1.518	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	321.03	19.528	.61765	1.667	.846	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	7.98	.331	.69171	1.567	1.391	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	7.97	.331	.69103	1.633	1.388	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	18.40	.629	.78606	1.500	1.917	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	22.52	.959	.75047	1.533	1.468	
ROUTE MCUNGE	AP-24.R	48	49	.02397	21.46	.954	.74663	1.667	1.399	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	43.89	1.547	.78606	1.500	1.858	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	51.57	2.501	.77052	1.533	1.324	
ROUTE MCUNGE	AP-25.R	51	52	.06087	50.29	2.491	.76743	1.600	1.291	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	23.23	.977	.78606	1.567	1.558	PER IMP= 70.00

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 1B
10-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 1B1024.IN

RUN DATE (MON/DAY/YR) = 12/19/1996
 USER NO. = C_ANDRSN.IO1

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = .84
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	44.99	3.548	1.03305	1.833	1.092	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	44.67	3.541	1.03094	1.866	1.084	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	22.07	1.157	1.14134	1.567	1.815	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	39.37	1.621	1.03706	1.500	2.099	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	36.85	1.617	1.03460	1.567	1.965	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	16.01	1.021	1.03476	1.667	1.352	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	49.03	2.638	1.03466	1.567	1.603	
ADD HYD	PART AP-5	70&88	5	.06680	71.10	3.794	1.06501	1.567	1.663	
ADD HYD	AP-5	5& 2	89	.13120	87.72	7.335	1.04829	1.633	1.045	
ROUTE MCUNGE	AP-5.R	89	2	.13120	87.57	7.331	1.04771	1.667	1.043	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	46.79	2.522	.93042	1.600	1.439	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	132.63	9.853	1.01496	1.633	1.139	
ROUTE MCUNGE	AP-7.R	3	4	.18202	131.21	9.837	1.01329	1.667	1.126	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	21.59	.874	.93159	1.500	1.917	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	143.70	10.711	1.00609	1.633	1.125	
ROUTE MCUNGE	AP-9.R	26	27	.19962	142.87	10.701	1.00509	1.633	1.118	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	15.51	.966	1.03489	1.667	1.385	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	158.00	11.666	1.00749	1.633	1.137	
COMPUTE NM HYD	I40D-1	-	1	.12600	31.00	2.453	.36506	1.800	.384	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	1.67	1.724	.25652	3.333	.021	AC-FT= 1.768
ROUTE	AP-11.R	2	4	.12600	1.65	1.697	.25253	3.833	.021	
COMPUTE NM HYD	I40D-2	-	1	.04840	22.39	.945	.36620	1.533	.723	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	22.39	2.642	.28408	1.533	.201	
ROUTE	AP-12.R	5	6	.17440	18.24	2.628	.28257	1.600	.163	
COMPUTE NM HYD	C4-D	-	1	.03820	46.86	1.898	.93159	1.500	1.917	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	60.76	4.526	.39919	1.533	.447	
ROUTE MCUNGE	AP-13.R	4	6	.21260	60.64	4.522	.39880	1.533	.446	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	36.07	1.673	.79402	1.567	1.427	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	96.39	6.195	.46073	1.533	.597	
ROUTE MCUNGE	AP-14.R	7	8	.25210	95.63	6.180	.45961	1.567	.593	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	4.20	.235	.26692	1.700	.398	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	98.83	6.415	.44778	1.567	.575	
ROUTE MCUNGE	AP-15.R	9	10	.26860	94.07	6.383	.44555	1.600	.547	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	17.82	.918	.93066	1.567	1.505	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	111.88	7.301	.47681	1.600	.609	
ADD HYD	AP-17	91&30	11	.50422	268.69	18.967	.70532	1.633	.833	
ROUTE MCUNGE	AP-17.R	11	12	.50422	267.47	18.950	.70468	1.633	.829	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	18.52	1.254	.71885	1.733	.885	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	283.66	20.204	.70555	1.633	.825	
ROUTE MCUNGE	AP-19.R	40	41	.53692	280.79	20.171	.70442	1.667	.817	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	16.39	1.131	.71877	1.733	.868	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	296.07	21.302	.70516	1.667	.817	
ROUTE MCUNGE	AP-21.R	43	44	.56642	295.39	21.288	.70470	1.667	.815	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	25.64	1.605	1.14009	1.667	1.518	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	321.03	22.893	.72409	1.667	.846	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	7.98	.394	.82416	1.567	1.391	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	7.97	.393	.82188	1.633	1.388	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	18.40	.745	.93159	1.500	1.917	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	22.52	1.138	.89054	1.533	1.468	
ROUTE MCUNGE	AP-24.R	48	49	.02397	21.46	1.131	.88466	1.667	1.399	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	43.89	1.833	.93151	1.500	1.858	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	51.57	2.964	.91306	1.533	1.324	
ROUTE MCUNGE	AP-25.R	51	52	.06087	50.29	2.951	.90910	1.600	1.291	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	23.23	1.157	.93079	1.567	1.558	PER IMP= 70.00

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 1B
100-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 1B1006.in

RUN DATE (MON/DAY/YR) =12/31/1996
 USER NO.= C_ANDRSN.IO1

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.210
SEDIMENT BULK										PK BF = .84
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	71.98	4.956	1.44289	1.800	1.746	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	71.03	4.943	1.43912	1.866	1.723	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	34.31	1.572	1.55145	1.567	2.821	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	62.39	2.255	1.44289	1.500	3.327	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	58.04	2.241	1.43381	1.533	3.095	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	25.56	1.424	1.44289	1.667	2.159	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	77.22	3.664	1.43730	1.567	2.524	
ADD HYD	PART AP-5	70&88	5	.06680	111.53	5.236	1.46976	1.567	2.609	
ADD HYD	AP-5	5& 2	89	.13120	141.56	10.179	1.45472	1.633	1.686	
ROUTE MCUNGE	AP-5.R	89	2	.13120	141.08	10.165	1.45264	1.667	1.680	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	76.50	3.617	1.33434	1.600	2.352	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	214.80	13.781	1.41960	1.633	1.844	
ROUTE MCUNGE	AP-7.R	3	4	.18202	211.88	13.755	1.41688	1.667	1.819	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	35.23	1.252	1.33433	1.500	3.128	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	232.88	15.007	1.40960	1.633	1.823	
ROUTE MCUNGE	AP-9.R	26	27	.19962	231.31	14.994	1.40840	1.633	1.811	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	24.73	1.347	1.44289	1.667	2.208	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	255.52	16.341	1.41118	1.633	1.839	
COMPUTE NM HYD	I400-1	-	1	.12600	66.92	4.702	.69972	1.800	.830	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	3.65	3.520	.52382	3.466	.045	AC-FT= 3.863
ROUTE	AP-11.R	2	4	.12600	3.64	3.482	.51813	3.833	.045	
COMPUTE NM HYD	I400-2	-	1	.04840	50.74	1.806	.69972	1.533	1.638	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	50.75	5.288	.56852	1.533	.455	
ROUTE	AP-12.R	5	6	.17440	44.95	5.269	.56649	1.567	.403	
COMPUTE NM HYD	C4-D	-	1	.03820	76.47	2.718	1.33433	1.500	3.128	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	113.95	7.988	.70445	1.533	.837	
ROUTE MCUNGE	AP-13.R	4	6	.21260	113.05	7.980	.70378	1.567	.831	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	61.56	2.514	1.19321	1.567	2.435	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	174.61	10.494	.78046	1.567	1.082	
ROUTE MCUNGE	AP-14.R	7	8	.25210	171.89	10.474	.77902	1.567	1.065	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	10.79	.572	.65043	1.700	1.022	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	180.15	11.047	.77112	1.567	1.048	
ROUTE MCUNGE	AP-15.R	9	10	.26860	169.57	10.988	.76702	1.600	.986	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	29.13	1.317	1.33433	1.567	2.460	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	198.66	12.304	.80357	1.600	1.081	
ADD HYD	AP-17	91&30	11	.50422	452.25	28.645	1.06521	1.633	1.401	
ROUTE MCUNGE	AP-17.R	11	12	.50422	449.80	28.614	1.06405	1.633	1.394	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	32.57	1.948	1.11722	1.733	1.556	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	478.60	30.563	1.06729	1.633	1.393	
ROUTE MCUNGE	AP-19.R	40	41	.53692	471.22	30.502	1.06518	1.667	1.371	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	28.84	1.758	1.11722	1.733	1.527	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	498.26	32.260	1.06789	1.667	1.374	
ROUTE MCUNGE	AP-21.R	43	44	.56642	496.14	32.230	1.06690	1.667	1.369	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	39.98	2.184	1.55145	1.667	2.367	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	536.12	34.415	1.08848	1.667	1.413	
COMPUTE NM HYD	I400-3&AP-23	-	45	.00897	13.34	.574	1.19907	1.567	2.324	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	13.30	.574	1.19955	1.633	2.317	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	30.03	1.067	1.33433	1.500	3.128	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	37.97	1.641	1.28387	1.533	2.475	
ROUTE MCUNGE	AP-24.R	48	49	.02397	36.29	1.635	1.27860	1.633	2.366	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	71.67	2.626	1.33434	1.500	3.035	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	90.83	4.261	1.31238	1.533	2.331	
ROUTE MCUNGE	AP-25.R	51	52	.06087	88.24	4.245	1.30749	1.600	2.265	CCODE = .2

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WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS **AHYMO SUMMARY TABLE - ALTERNATIVE 1B** **100-YEAR 24-HOUR STORM**

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1B10024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = .84
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	71.98	5.793	1.68650	1.800	1.746	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	71.03	5.775	1.68127	1.866	1.723	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	34.31	1.855	1.83049	1.567	2.821	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	62.39	2.645	1.69252	1.500	3.327	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	58.04	2.628	1.68193	1.533	3.095	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	25.56	1.667	1.68906	1.667	2.159	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	77.22	4.295	1.68469	1.567	2.524	
ADD HYD	PART AP-5	70&88	5	.06680	111.53	6.150	1.72616	1.567	2.609	
ADD HYD	AP-5	5& 2	89	.13120	141.56	11.924	1.70412	1.633	1.686	
ROUTE MCUNGE	AP-5.R	89	2	.13120	141.08	11.904	1.70129	1.667	1.680	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	76.50	4.204	1.55100	1.600	2.352	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	214.80	16.108	1.65933	1.633	1.844	
ROUTE MCUNGE	AP-7.R	3	4	.18202	211.88	16.075	1.65586	1.667	1.819	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	35.23	1.458	1.55277	1.500	3.128	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	232.88	17.532	1.64677	1.633	1.823	
ROUTE MCUNGE	AP-9.R	26	27	.19962	231.31	17.514	1.64504	1.633	1.811	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	24.73	1.577	1.68926	1.667	2.208	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	255.52	19.090	1.64861	1.633	1.839	
COMPUTE NM HYD	I40D-1	-	1	.12600	66.92	5.215	.77597	1.800	.830	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	3.65	3.732	.55532	3.466	.045	AC-FT= 3.863
ROUTE	AP-11.R	2	4	.12600	3.64	3.688	.54879	3.833	.045	
COMPUTE NM HYD	I40D-2	-	1	.04840	50.74	2.007	.77763	1.533	1.638	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	50.75	5.695	.61229	1.533	.455	
ROUTE	AP-12.R	5	6	.17440	44.95	5.672	.60976	1.567	.403	
COMPUTE NM HYD	C4-D	-	1	.03820	76.47	3.163	1.55276	1.500	3.128	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	113.95	8.835	.77920	1.533	.837	
ROUTE MCUNGE	AP-13.R	4	6	.21260	113.05	8.824	.77826	1.567	.831	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	61.56	2.887	1.37038	1.567	2.435	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	174.61	11.711	.87103	1.567	1.082	
ROUTE MCUNGE	AP-14.R	7	8	.25210	171.89	11.689	.86935	1.567	1.065	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	10.79	.591	.67198	1.700	1.022	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	180.15	12.280	.85723	1.567	1.048	
ROUTE MCUNGE	AP-15.R	9	10	.26860	169.57	12.214	.85260	1.600	.986	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	29.13	1.531	1.55137	1.567	2.460	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	198.66	13.744	.89762	1.600	1.081	
ADD HYD	AP-17	91&30	11	.50422	452.25	32.835	1.22100	1.633	1.401	
ROUTE MCUNGE	AP-17.R	11	12	.50422	449.80	32.797	1.21958	1.633	1.394	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	32.57	2.216	1.27055	1.733	1.556	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	478.60	35.012	1.22268	1.633	1.393	
ROUTE MCUNGE	AP-19.R	40	41	.53692	471.22	34.940	1.22015	1.667	1.371	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	28.84	1.999	1.27042	1.733	1.527	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	498.26	36.939	1.22277	1.667	1.374	
ROUTE MCUNGE	AP-21.R	43	44	.56642	496.14	36.904	1.22161	1.667	1.369	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	39.98	2.575	1.82861	1.667	2.367	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	536.12	39.478	1.24864	1.667	1.413	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	13.34	.669	1.39785	1.567	2.324	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	13.30	.668	1.39606	1.633	2.317	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	30.03	1.242	1.55277	1.500	3.128	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	37.97	1.910	1.49412	1.533	2.475	
ROUTE MCUNGE	AP-24.R	48	49	.02397	36.29	1.900	1.48616	1.633	2.366	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	71.67	3.056	1.55264	1.500	3.035	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	90.83	4.956	1.52646	1.533	2.331	
ROUTE MCUNGE	AP-25.R	51	52	.06087	88.24	4.935	1.52025	1.600	2.265	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	37.95	1.928	1.55155	1.567	2.545	PER IMP= 70.00

[illegible]

APPENDIX B-3

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

ALTERNATIVE 1C

WEST MESA DIVERSION PROJECT – DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 1C
10-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 1C106.IN

RUN DATE (MON/DAY/YR) =12/19/1996
 USER NO.= C_ANDRSN.IO1

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = .53
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	28.39	2.239	.65181	1.833	.689	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	28.23	2.236	.65107	1.866	.685	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	13.93	.730	.72013	1.567	1.145	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	24.84	1.023	.65434	1.500	1.325	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	23.54	1.016	.65019	1.567	1.255	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	10.10	.644	.65288	1.667	.853	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	31.23	1.660	.65123	1.567	1.021	
ADD HYD	PART AP-5	70&88	5	.06680	45.15	2.390	.67083	1.567	1.056	
ADD HYD	AP-5	5& 2	89	.13120	55.33	4.626	.66113	1.667	.659	
ROUTE MCUNGE	AP-5.R	89	2	.13120	55.23	4.626	.66112	1.700	.658	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	29.52	1.591	.58705	1.600	.908	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	83.48	6.217	.64044	1.633	.717	
ROUTE MCUNGE	AP-7.R	3	4	.18202	82.74	6.207	.63938	1.667	.710	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	13.62	.552	.58779	1.500	1.209	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	90.40	6.759	.63483	1.633	.708	
ROUTE MCUNGE	AP-9.R	26	27	.19962	89.85	6.752	.63419	1.667	.703	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	9.78	.609	.65297	1.667	.874	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	99.63	7.361	.63570	1.667	.717	
COMPUTE NM HYD	I400-1	-	1	.12600	19.56	1.548	.23034	1.800	.243	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	1.05	1.088	.16185	3.333	.013	AC-FT= 1.115
ROUTE	AP-11.R	2	4	.12600	1.04	1.069	.15910	3.900	.013	
COMPUTE NM HYD	I400-2	-	1	.04840	14.13	.596	.23105	1.533	.456	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	14.13	1.666	.17907	1.533	.127	
ROUTE	AP-12.R	5	6	.17440	11.11	1.655	.17795	1.600	.100	
COMPUTE NM HYD	C4-D	-	1	.03820	29.56	1.198	.58779	1.500	1.209	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	37.73	2.853	.25159	1.533	.277	
ROUTE MCUNGE	AP-13.R	4	6	.21260	37.53	2.850	.25133	1.533	.276	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	22.76	1.055	.50099	1.567	.900	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	60.16	3.905	.29045	1.567	.373	
ROUTE MCUNGE	AP-14.R	7	8	.25210	59.94	3.899	.28998	1.567	.371	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	2.65	.148	.16841	1.700	.251	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	61.96	4.047	.28251	1.567	.360	
ROUTE MCUNGE	AP-15.R	9	10	.26860	59.58	4.031	.28136	1.633	.347	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	11.24	.579	.58720	1.567	.949	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	70.18	4.610	.30106	1.633	.382	
ADD HYD	AP-17	91&30	11	.50422	169.46	11.971	.44516	1.633	.525	
ROUTE MCUNGE	AP-17.R	11	12	.50422	168.36	11.966	.44497	1.633	.522	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	11.68	.791	.45356	1.733	.558	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	178.57	12.757	.44550	1.633	.520	
ROUTE MCUNGE	AP-19.R	40	41	.53692	177.76	12.733	.44464	1.667	.517	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	10.34	.714	.45351	1.733	.548	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	187.40	13.446	.44510	1.667	.517	
ROUTE MCUNGE	AP-21.R	43	44	.56642	186.74	13.438	.44483	1.667	.515	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	16.18	1.013	.71934	1.667	.958	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	202.92	14.451	.45705	1.667	.535	
COMPUTE NM HYD	I400-3&AP-23	-	45	.00897	5.04	.249	.52000	1.567	.877	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	5.01	.248	.51938	1.633	.873	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	11.61	.470	.58779	1.500	1.209	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	13.89	.719	.56219	1.533	.905	
ROUTE MCUNGE	AP-24.R	48	49	.02397	13.22	.714	.55827	1.700	.862	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	27.69	1.157	.58774	1.500	1.173	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	31.01	1.870	.57613	1.533	.796	
ROUTE MCUNGE	AP-25.R	51	52	.06087	30.18	1.866	.57489	1.600	.775	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	14.66	.730	.58728	1.567	.983	PER IMP= 70.00

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 1C
10-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1C1024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = .53
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	28.39	2.239	.65181	1.833	.689	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	28.23	2.236	.65107	1.866	.685	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	13.93	.730	.72013	1.567	1.145	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	24.84	1.023	.65434	1.500	1.325	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	23.54	1.016	.65019	1.567	1.255	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	10.10	.644	.65288	1.667	.853	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	31.23	1.660	.65123	1.567	1.021	
ADD HYD	PART AP-5	70&88	5	.06680	45.15	2.390	.67083	1.567	1.056	
ADD HYD	AP-5	5& 2	89	.13120	55.33	4.626	.66113	1.667	.659	
ROUTE MCUNGE	AP-5.R	89	2	.13120	55.23	4.626	.66112	1.700	.658	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	29.52	1.591	.58705	1.600	.908	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	83.48	6.217	.64044	1.633	.717	
ROUTE MCUNGE	AP-7.R	3	4	.18202	82.74	6.207	.63938	1.667	.710	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	13.62	.552	.58779	1.500	1.209	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	90.40	6.759	.63483	1.633	.708	
ROUTE MCUNGE	AP-9.R	26	27	.19962	89.85	6.752	.63419	1.667	.703	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	9.78	.609	.65297	1.667	.874	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	99.63	7.361	.63570	1.667	.717	
COMPUTE NM HYD	I40D-1	-	1	.12600	19.56	1.548	.23034	1.800	.243	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	1.05	1.088	.16185	3.333	.013	AC-FT= 1.115
ROUTE	AP-11.R	2	4	.12600	1.04	1.069	.15910	3.900	.013	
COMPUTE NM HYD	I40D-2	-	1	.04840	14.13	.596	.23105	1.533	.456	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	14.13	1.666	.17907	1.533	.127	
ROUTE	AP-12.R	5	6	.17440	11.11	1.655	.17795	1.600	.100	
COMPUTE NM HYD	C4-D	-	1	.03820	29.56	1.198	.58779	1.500	1.209	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	37.73	2.853	.25159	1.533	.277	
ROUTE MCUNGE	AP-13.R	4	6	.21260	37.53	2.850	.25133	1.533	.276	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	22.76	1.055	.50099	1.567	.900	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	60.16	3.905	.29045	1.567	.373	
ROUTE MCUNGE	AP-14.R	7	8	.25210	59.94	3.899	.28998	1.567	.371	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	2.65	.148	.16841	1.700	.251	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	61.96	4.047	.28251	1.567	.360	
ROUTE MCUNGE	AP-15.R	9	10	.26860	59.58	4.031	.28136	1.633	.347	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	11.24	.579	.58720	1.567	.949	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	70.18	4.610	.30106	1.633	.382	
ADD HYD	AP-17	91&30	11	.50422	169.46	11.971	.44516	1.633	.525	
ROUTE MCUNGE	AP-17.R	11	12	.50422	168.36	11.966	.44497	1.633	.522	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	11.68	.791	.45356	1.733	.558	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	178.57	12.757	.44550	1.633	.520	
ROUTE MCUNGE	AP-19.R	40	41	.53692	177.76	12.733	.44464	1.667	.517	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	10.34	.714	.45351	1.733	.548	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	187.40	13.446	.44510	1.667	.517	
ROUTE MCUNGE	AP-21.R	43	44	.56642	186.74	13.438	.44483	1.667	.515	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	16.18	1.013	.71934	1.667	.958	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	202.92	14.451	.45705	1.667	.535	
COMPUTE NM HYD	140D-3&AP-23	-	45	.00897	5.04	.249	.52000	1.567	.877	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	5.01	.248	.51938	1.633	.873	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	11.61	.470	.58779	1.500	1.209	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	13.89	.719	.56219	1.533	.905	
ROUTE MCUNGE	AP-24.R	48	49	.02397	13.22	.714	.55827	1.700	.862	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	27.69	1.157	.58774	1.500	1.173	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	31.01	1.870	.57613	1.533	.796	
ROUTE MCUNGE	AP-25.R	51	52	.06087	30.18	1.866	.57489	1.600	.775	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	14.66	.730	.58728	1.567	.983	PER IMP= 70.00
ADD HYD	AP-26	53&52	54	.08417	44.52	2.596	.57832	1.567	.826	

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 1C
100-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1C1006.in

RUN DATE (MON/DAY/YR) =12/31/1996
USER NO. = C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.210
SEDIMENT BULK										PK BF = .53
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	45.41	3.127	.91040	1.800	1.102	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	45.05	3.122	.90907	1.866	1.093	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	21.65	.992	.97889	1.567	1.780	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	39.37	1.423	.91040	1.500	2.099	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	36.90	1.415	.90538	1.533	1.968	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	16.13	.898	.91040	1.667	1.362	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	49.47	2.313	.90730	1.567	1.617	
ADD HYD	PART AP-5	70&88	5	.06680	71.11	3.305	.92766	1.567	1.663	
ADD HYD	AP-5	5& 2	89	.13120	89.33	6.427	.91853	1.633	1.064	
ROUTE MCUNGE	AP-5.R	89	2	.13120	89.14	6.421	.91758	1.667	1.062	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	48.26	2.282	.84190	1.600	1.484	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	135.69	8.702	.89645	1.633	1.165	
ROUTE MCUNGE	AP-7.R	3	4	.18202	134.24	8.700	.89618	1.667	1.152	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	22.23	.790	.84190	1.500	1.974	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	147.42	9.490	.89139	1.633	1.154	
ROUTE MCUNGE	AP-9.R	26	27	.19962	146.65	9.484	.89077	1.633	1.148	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	15.60	.850	.91040	1.667	1.393	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	161.93	10.333	.89235	1.633	1.165	
COMPUTE NM HYD	I40D-1	-	1	.12600	42.23	2.967	.44149	1.800	.524	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.31	2.221	.33051	3.466	.029	AC-FT= 2.438
ROUTE	AP-11.R	2	4	.12600	2.29	2.194	.32642	3.866	.028	
COMPUTE NM HYD	I40D-2	-	1	.04840	32.01	1.140	.44149	1.533	1.033	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	32.02	3.333	.35835	1.533	.287	
ROUTE	AP-12.R	5	6	.17440	26.96	3.320	.35691	1.600	.242	
COMPUTE NM HYD	C4-D	-	1	.03820	48.25	1.715	.84190	1.500	1.973	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	69.79	5.035	.44405	1.533	.513	
ROUTE MCUNGE	AP-13.R	4	6	.21260	69.26	5.028	.44343	1.567	.509	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	38.84	1.586	.75286	1.567	1.537	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	108.11	6.614	.49191	1.567	.670	
ROUTE MCUNGE	AP-14.R	7	8	.25210	107.11	6.606	.49130	1.567	.664	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	6.81	.361	.41039	1.700	.645	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	112.32	6.967	.48633	1.567	.653	
ROUTE MCUNGE	AP-15.R	9	10	.26860	107.43	6.939	.48437	1.633	.625	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	18.38	.831	.84190	1.567	1.552	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	125.23	7.769	.50741	1.600	.682	
ADD HYD	AP-17	91&30	11	.50422	286.70	18.103	.67317	1.633	.888	
ROUTE MCUNGE	AP-17.R	11	12	.50422	285.39	18.088	.67261	1.633	.884	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	20.55	1.229	.70491	1.733	.982	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	303.56	19.317	.67458	1.633	.883	
ROUTE MCUNGE	AP-19.R	40	41	.53692	300.72	19.300	.67397	1.667	.875	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	18.19	1.109	.70491	1.733	.964	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	317.78	20.409	.67558	1.667	.877	
ROUTE MCUNGE	AP-21.R	43	44	.56642	316.95	20.398	.67522	1.667	.874	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	25.23	1.378	.97889	1.667	1.493	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	342.18	21.776	.68874	1.667	.902	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	8.42	.362	.75656	1.567	1.466	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	8.42	.362	.75641	1.633	1.467	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	18.95	.674	.84190	1.500	1.974	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	23.52	1.035	.80989	1.533	1.533	
ROUTE MCUNGE	AP-24.R	48	49	.02397	22.48	1.030	.80565	1.667	1.465	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	45.22	1.657	.84190	1.500	1.915	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	53.81	2.687	.82762	1.533	1.381	
ROUTE MCUNGE	AP-25.R	51	52	.06087	52.66	2.685	.82722	1.600	1.352	CCODE = .2

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS **AHYMO SUMMARY TABLE - ALTERNATIVE 1C** **100-YEAR 24-HOUR STORM**

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 1C10024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = .53
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	45.41	3.655	1.06410	1.800	1.102	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	45.05	3.647	1.06182	1.866	1.093	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	21.65	1.170	1.15495	1.567	1.780	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	39.37	1.669	1.06790	1.500	2.099	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	36.90	1.659	1.06193	1.533	1.968	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	16.13	1.052	1.06571	1.667	1.362	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	49.47	2.711	1.06340	1.567	1.617	
ADD HYD	PART AP-5	70&88	5	.06680	71.11	3.881	1.08944	1.567	1.663	
ADD HYD	AP-5	5& 2	89	.13120	89.33	7.528	1.07588	1.633	1.064	
ROUTE MCUNGE	AP-5.R	89	2	.13120	89.14	7.518	1.07444	1.667	1.062	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	48.26	2.652	.97861	1.600	1.484	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	135.69	10.171	1.04769	1.633	1.165	
ROUTE MCUNGE	AP-7.R	3	4	.18202	134.24	10.164	1.04696	1.667	1.152	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	22.23	.920	.97972	1.500	1.974	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	147.42	11.083	1.04103	1.633	1.154	
ROUTE MCUNGE	AP-9.R	26	27	.19962	146.65	11.073	1.04006	1.633	1.148	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	15.60	.995	1.06585	1.667	1.393	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	161.93	12.068	1.04214	1.633	1.165	
COMPUTE NM HYD	I400-1	-	1	.12600	42.23	3.290	.48960	1.800	.524	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.31	2.355	.35038	3.466	.029	AC-FT= 2.438
ROUTE	AP-11.R	2	4	.12600	2.29	2.322	.34555	3.866	.028	
COMPUTE NM HYD	I400-2	-	1	.04840	32.01	1.267	.49065	1.533	1.033	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	32.02	3.589	.38582	1.533	.287	
ROUTE	AP-12.R	5	6	.17440	26.96	3.572	.38401	1.600	.242	
COMPUTE NM HYD	C4-D	-	1	.03820	48.25	1.996	.97972	1.500	1.973	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	69.79	5.568	.49105	1.533	.513	
ROUTE MCUNGE	AP-13.R	4	6	.21260	69.26	5.559	.49024	1.567	.509	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	38.84	1.822	.86465	1.567	1.537	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	108.11	7.380	.54890	1.567	.670	
ROUTE MCUNGE	AP-14.R	7	8	.25210	107.11	7.369	.54810	1.567	.664	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	6.81	.373	.42399	1.700	.645	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	112.32	7.742	.54047	1.567	.653	
ROUTE MCUNGE	AP-15.R	9	10	.26860	107.43	7.709	.53813	1.633	.625	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	18.38	.966	.97884	1.567	1.552	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	125.23	8.675	.56653	1.600	.682	
ADD HYD	AP-17	91&30	11	.50422	286.70	20.742	.77133	1.633	.888	
ROUTE MCUNGE	AP-17.R	11	12	.50422	285.39	20.722	.77057	1.633	.884	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	20.55	1.398	.80165	1.733	.982	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	303.56	22.120	.77246	1.633	.883	
ROUTE MCUNGE	AP-19.R	40	41	.53692	300.72	22.094	.77154	1.667	.875	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	18.19	1.261	.80157	1.733	.964	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.56642	317.78	23.355	.77311	1.667	.877	
ROUTE MCUNGE	AP-21.R	43	44	.56642	316.95	23.340	.77261	1.667	.874	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	25.23	1.625	1.15377	1.667	1.493	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	342.18	24.964	.78958	1.667	.902	
COMPUTE NM HYD	I400-3&AP-23	-	45	.00897	8.42	.422	.88197	1.567	1.466	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	8.42	.421	.88032	1.633	1.467	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	18.95	.784	.97972	1.500	1.974	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	23.52	1.205	.94252	1.533	1.533	
ROUTE MCUNGE	AP-24.R	48	49	.02397	22.48	1.197	.93635	1.667	1.465	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	45.22	1.928	.97964	1.500	1.915	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	53.81	3.125	.96260	1.533	1.381	
ROUTE MCUNGE	AP-25.R	51	52	.06087	52.66	3.121	.96138	1.600	1.352	CCODE = .2
COMPUTE NM HYD	D6-D	-	53	.02330	23.94	1.217	.97896	1.567	1.606	PER IMP= 70.00

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APPENDIX B-4

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

ALTERNATIVE 2A1

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2A1
10-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 2A1106.IN

RUN DATE (MON/DAY/YR) = 12/19/1996
 USER NO. = C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.90	3.649	1.06251	1.833	1.332	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.46	3.642	1.06033	1.866	1.321	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.93	1.181	1.16584	1.567	2.215	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.660	1.06251	1.500	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.88	1.653	1.05749	1.533	2.393	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.53	1.048	1.06251	1.667	1.650	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.53	2.701	1.05941	1.567	1.946	
ADD HYD	PART AP-5	70&88	5	.06680	86.46	3.882	1.08968	1.567	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.19	7.524	1.07527	1.667	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.91	7.519	1.07450	1.667	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	2.600	.95918	1.600	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.74	10.118	1.04229	1.633	1.388	
COMPUTE NM HYD	CRDP-1	-	30	.00466	.79	.022	.08829	1.533	.264	PER IMP= .00
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	.900	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	PART1 AP-9	25&30	31	.02226	27.08	.922	.77684	1.500	1.901	
ADD HYD	PART2 AP-9	31& 3	66	.20428	178.40	11.041	1.01337	1.600	1.365	
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	.992	1.06251	1.667	1.689	PER IMP= 80.00
ADD HYD	AP-9	66&90	32	.22178	196.21	12.032	1.01724	1.633	1.382	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.83	2.577	.38351	1.800	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	1.932	.28743	3.333	.025	AC-FT= 2.157
ROUTE	AP-11.R	2	4	.12600	2.02	1.907	.28379	3.800	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.32	.990	.38351	1.533	.882	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.32	2.897	.31146	1.533	.245	
ROUTE	AP-12.R	5	6	.17440	22.54	2.885	.31014	1.600	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	1.954	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.66	4.839	.42676	1.533	.549	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.44	4.834	.42629	1.533	.547	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.01	1.738	.82484	1.567	1.741	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.06	6.571	.48874	1.533	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.00	6.561	.48799	1.567	.725	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.13	.271	.30818	1.700	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.92	6.832	.47694	1.567	.703	
ROUTE MCUNGE	AP-15.R	9	10	.26860	115.04	6.813	.47560	1.600	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.74	.946	.95918	1.567	1.836	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.77	7.759	.50676	1.600	.744	
ADD HYD	AP-16A	32&30	21	.50888	332.32	19.792	.72924	1.600	1.020	
ROUTE RESERVOIR	AP-17	21	33	.50888	83.94	19.477	.71765	2.266	.258	AC-FT= 11.262
ROUTE MCUNGE	AP-17.R	33	12	.50888	83.92	19.472	.71747	2.300	.258	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.60	1.312	.75251	1.733	1.080	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.54158	92.23	20.785	.71958	2.200	.266	
ROUTE MCUNGE	AP-19.R	40	41	.54158	92.21	20.779	.71940	2.200	.266	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.184	.75251	1.733	1.060	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57108	101.65	21.963	.72111	2.066	.278	
ROUTE MCUNGE	AP-21.R	43	44	.57108	101.64	21.960	.72101	2.100	.278	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	31.29	1.642	1.16584	1.667	1.852	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59748	119.09	23.602	.74067	1.900	.311	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.74	.404	.84406	1.567	1.697	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.70	.404	.84474	1.633	1.690	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.767	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.74	1.171	.91633	1.533	1.808	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.44	1.166	.91205	1.667	1.724	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.55	1.888	.95918	1.500	2.268	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	63.51	3.054	.94061	1.533	1.630	
ROUTE MCUNGE	AP-25.R	51	52	.06087	62.07	3.045	.93807	1.600	1.593	CCODE = .2

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2A1
10-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 2A11024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
 USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.90	4.330	1.26057	1.833	1.332	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.46	4.318	1.25717	1.866	1.321	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.93	1.411	1.39271	1.567	2.215	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.977	1.26546	1.500	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.88	1.968	1.25921	1.533	2.393	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.53	1.246	1.26265	1.667	1.650	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.53	3.214	1.26054	1.567	1.946	
ADD HYD	PART AP-5	70&88	5	.06680	86.46	4.625	1.29814	1.567	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.19	8.943	1.27803	1.667	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.91	8.933	1.27662	1.667	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	3.077	1.13533	1.600	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.74	12.010	1.23717	1.633	1.388	
COMPUTE NM HYD	CRDP-1	-	30	.00466	.79	.022	.08829	1.533	.264	PER IMP= .00
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	1.067	1.13676	1.500	2.339	PER IMP= 70.00
ADD HYD	PART1 AP-9	25&30	31	.02226	27.08	1.089	.91727	1.500	1.901	
ADD HYD	PART2 AP-9	31& 3	66	.20428	178.40	13.099	1.20231	1.600	1.365	
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	1.179	1.26282	1.667	1.689	PER IMP= 80.00
ADD HYD	AP-9	66&90	32	.22178	196.21	14.278	1.20709	1.633	1.382	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.83	2.994	.44547	1.800	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	2.103	.31301	3.333	.025	AC-FT= 2.157
ROUTE	AP-11.R	2	4	.12600	2.02	2.072	.30836	3.800	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.32	1.153	.44685	1.533	.882	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.32	3.226	.34680	1.533	.245	
ROUTE	AP-12.R	5	6	.17440	22.54	3.209	.34502	1.600	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	2.316	1.13676	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.66	5.525	.48728	1.533	.549	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.44	5.517	.48656	1.533	.547	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.01	2.041	.96889	1.567	1.741	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.06	7.558	.56214	1.533	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.00	7.545	.56115	1.567	.725	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.13	.287	.32570	1.700	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.92	7.831	.54668	1.567	.703	
ROUTE MCUNGE	AP-15.R	9	10	.26860	115.04	7.805	.54484	1.600	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.74	1.120	1.13563	1.567	1.836	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.77	8.926	.58291	1.600	.744	
ADD HYD	AP-16A	32&30	21	.50888	332.32	23.203	.85494	1.600	1.020	
ROUTE RESERVOIR	AP-17	21	33	.50888	83.94	22.113	.81477	2.266	.258	AC-FT= 11.262
ROUTE MCUNGE	AP-17.R	33	12	.50888	83.92	22.101	.81433	2.300	.258	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.60	1.530	.87717	1.733	1.080	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.54158	92.23	23.631	.81813	2.200	.266	
ROUTE MCUNGE	AP-19.R	40	41	.54158	92.21	23.614	.81756	2.200	.266	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.380	.87706	1.733	1.060	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57108	101.65	24.994	.82063	2.066	.278	
ROUTE MCUNGE	AP-21.R	43	44	.57108	101.64	24.987	.82038	2.100	.278	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	31.29	1.959	1.39118	1.667	1.852	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59748	119.09	26.945	.84560	1.900	.311	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.74	.481	1.00567	1.567	1.697	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.70	.481	1.00447	1.633	1.690	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.909	1.13677	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.74	1.390	1.08726	1.533	1.808	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.44	1.381	1.08050	1.667	1.724	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.55	2.237	1.13666	1.500	2.268	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	63.51	3.618	1.11455	1.533	1.630	
ROUTE MCUNGE	AP-25.R	51	52	.06087	62.07	3.607	1.11095	1.600	1.593	CCODE = .2

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2A1
100-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 2A11006.in

RUN DATE (MON/DAY/YR) =12/31/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.210
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.83	6.047	1.76067	1.800	2.131	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.00	6.026	1.75439	1.866	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.86	1.918	1.89314	1.567	3.442	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	2.751	1.76067	1.500	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.27	2.732	1.74833	1.533	3.747	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.19	1.737	1.76067	1.667	2.634	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.55	4.469	1.75309	1.567	3.058	
ADD HYD	PART AP-5	70&88	5	.06680	135.42	6.388	1.79292	1.567	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.83	12.413	1.77401	1.633	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.68	12.388	1.77039	1.667	2.045	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.34	4.413	1.62821	1.600	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.48	16.801	1.73069	1.633	2.245	
COMPUTE NM HYD	CRDP-1	-	30	.00466	4.08	.115	.46324	1.533	1.369	PER IMP= .00
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.528	1.62821	1.500	3.817	PER IMP= 70.00
ADD HYD	PART1 AP-9	25&30	31	.02226	46.98	1.643	1.38431	1.500	3.298	
ADD HYD	PART2 AP-9	31& 3	66	.20428	292.08	18.444	1.69294	1.600	2.234	
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.643	1.76067	1.667	2.694	PER IMP= 80.00
ADD HYD	AP-9	66&90	32	.22178	319.69	20.088	1.69828	1.600	2.252	
COMPUTE NM HYD	I40D-1	-	1	.12600	81.66	5.738	.85383	1.800	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.315	.64217	3.400	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.273	.63581	3.666	.060	
COMPUTE NM HYD	I40D-2	-	1	.04840	61.91	2.204	.85383	1.533	1.999	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.93	6.477	.69631	1.533	.555	
ROUTE	AP-12.R	5	6	.17440	56.29	6.455	.69398	1.567	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.31	3.317	1.62821	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.03	9.772	.86184	1.533	1.036	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.56	9.763	.86100	1.567	1.026	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.12	3.067	1.45600	1.567	2.972	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	214.69	12.830	.95423	1.567	1.331	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.72	12.788	.95112	1.567	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.698	.79367	1.700	1.247	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.80	13.487	.94145	1.567	1.279	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.22	13.387	.93449	1.600	1.194	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.606	1.62820	1.567	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.72	14.993	.97919	1.600	1.310	
ADD HYD	AP-16A	32&30	21	.50888	560.41	35.081	1.29258	1.600	1.721	
ROUTE RESERVOIR	AP-17	21	33	.50888	129.21	34.453	1.26944	2.300	.397	AC-FT= 19.266
ROUTE MCUNGE	AP-17.R	33	12	.50888	129.20	34.445	1.26916	2.300	.397	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.74	2.378	1.36328	1.733	1.899	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.54158	143.64	36.823	1.27484	2.166	.414	
ROUTE MCUNGE	AP-19.R	40	41	.54158	143.55	36.809	1.27436	2.200	.414	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.19	2.145	1.36328	1.733	1.864	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57108	166.96	38.954	1.27895	1.833	.457	
ROUTE MCUNGE	AP-21.R	43	44	.57108	166.96	38.948	1.27875	1.866	.457	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	48.79	2.666	1.89314	1.667	2.888	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59748	204.12	41.613	1.30589	1.800	.534	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	16.28	.700	1.46315	1.567	2.835	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.18	.699	1.46154	1.633	2.819	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.303	1.62821	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.58	2.002	1.56582	1.533	3.036	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.25	2.001	1.56558	1.600	3.015	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.45	3.204	1.62821	1.500	3.703	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	127.55	5.206	1.60353	1.533	3.274	

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WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2A1
100-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 2A110024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
 USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.83	7.068	2.05793	1.800	2.131	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.00	7.041	2.04993	1.866	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.86	2.263	2.23364	1.567	3.442	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	3.227	2.06528	1.500	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.27	3.205	2.05111	1.533	3.747	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.19	2.034	2.06105	1.667	2.634	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.55	5.239	2.05495	1.567	3.058	
ADD HYD	PART_AP-5	70&88	5	.06680	135.42	7.502	2.10578	1.567	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.83	14.543	2.07836	1.633	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.68	14.511	2.07385	1.667	2.045	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.34	5.130	1.89259	1.600	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.48	19.641	2.02324	1.633	2.245	
COMPUTE NM HYD	CRDP-1	-	30	.00466	4.08	.115	.46324	1.533	1.369	PER IMP= .00
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.779	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	PART1_AP-9	25&30	31	.02226	46.98	1.894	1.59506	1.500	3.298	
ADD HYD	PART2_AP-9	31& 3	66	.20428	292.08	21.535	1.97658	1.600	2.234	
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.924	2.06130	1.667	2.694	PER IMP= 80.00
ADD HYD	AP-9	66&90	32	.22178	319.69	23.459	1.98327	1.600	2.252	
COMPUTE NM HYD	I40D-1	-	1	.12600	81.66	6.363	.94687	1.800	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.574	.68061	3.400	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.522	.67299	3.666	.060	
COMPUTE NM HYD	I40D-2	-	1	.04840	61.91	2.449	.94889	1.533	1.999	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.93	6.972	.74956	1.533	.555	
ROUTE	AP-12.R	5	6	.17440	56.29	6.945	.74665	1.567	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.31	3.860	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.03	10.805	.95294	1.533	1.036	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.56	10.792	.95178	1.567	1.026	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.12	3.523	1.67219	1.567	2.972	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	214.69	14.315	1.06466	1.567	1.331	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.72	14.269	1.06127	1.567	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.722	.81997	1.700	1.247	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.80	14.991	1.04645	1.567	1.279	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.22	14.882	1.03885	1.600	1.194	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.868	1.89304	1.567	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.72	16.750	1.09389	1.600	1.310	
ADD HYD	AP-16A	32&30	21	.50888	560.41	40.208	1.48150	1.600	1.721	
ROUTE RESERVOIR	AP-17	21	33	.50888	129.21	38.457	1.41697	2.300	.397	AC-FT= 19.266
ROUTE MCUNGE	AP-17.R	33	12	.50888	129.20	38.443	1.41644	2.300	.397	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.74	2.704	1.55037	1.733	1.899	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.54158	143.64	41.146	1.42453	2.166	.414	
ROUTE MCUNGE	AP-19.R	40	41	.54158	143.55	41.119	1.42356	2.200	.414	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.19	2.439	1.55021	1.733	1.864	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57108	166.96	43.558	1.43010	1.833	.457	
ROUTE MCUNGE	AP-21.R	43	44	.57108	166.96	43.546	1.42974	1.866	.457	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.02640	48.79	3.142	2.23134	1.667	2.888	PER IMP= 90.00
ADD HYD	PART_AP-27	44&92	93	.59748	204.12	46.688	1.46515	1.800	.534	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	16.28	.816	1.70570	1.567	2.835	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.18	.814	1.70175	1.633	2.819	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.516	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.58	2.330	1.82252	1.533	3.036	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.25	2.326	1.81956	1.600	3.015	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.45	3.729	1.89459	1.500	3.703	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	127.55	6.055	1.86505	1.533	3.274	
ROUTE MCUNGE	AP-25.R	51	52	.06087	114.20	5.980	1.84214	1.567	2.931	CCODE = .2

[illegible]

APPENDIX B-5

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

ALTERNATIVE 2B1

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B1
10-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 2B1106.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.90	3.649	1.06251	1.833	1.332	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.46	3.642	1.06033	1.866	1.321	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.93	1.181	1.16584	1.567	2.215	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.660	1.06251	1.500	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.88	1.653	1.05749	1.533	2.393	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.53	1.048	1.06251	1.667	1.650	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.53	2.701	1.05941	1.567	1.946	
ADD HYD	PART AP-5	70&88	5	.06680	86.46	3.882	1.08968	1.567	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.19	7.524	1.07527	1.667	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.91	7.519	1.07450	1.667	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	2.600	.95918	1.600	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.74	10.118	1.04229	1.633	1.388	
ROUTE MCUNGE	AP-7.R	3	4	.18202	159.93	10.103	1.04067	1.667	1.373	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	.900	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	175.12	11.003	1.03348	1.633	1.371	
ROUTE MCUNGE	AP-9.R	26	27	.19962	174.10	10.997	1.03289	1.633	1.363	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	.992	1.06251	1.667	1.689	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	192.56	11.988	1.03527	1.633	1.386	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.83	2.577	.38351	1.800	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	1.932	.28743	3.333	.025	AC-FT= 2.157
ROUTE	AP-11.R	2	4	.12600	2.02	1.907	.28379	3.800	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.32	.990	.38351	1.533	.882	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.32	2.897	.31146	1.533	.245	
ROUTE	AP-12.R	5	6	.17440	22.54	2.885	.31014	1.600	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	1.954	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.66	4.839	.42676	1.533	.549	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.44	4.834	.42629	1.533	.547	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.01	1.738	.82484	1.567	1.741	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.06	6.571	.48874	1.533	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.00	6.561	.48799	1.567	.725	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.13	.271	.30818	1.700	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.92	6.832	.47694	1.567	.703	
ROUTE MCUNGE	AP-15.R	9	10	.26860	115.04	6.813	.47560	1.600	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.74	.946	.95918	1.567	1.836	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.77	7.759	.50676	1.600	.744	
ADD HYD	AP-17	91&30	11	.50422	327.19	19.748	.73434	1.633	1.014	
ROUTE MCUNGE	AP-17.R	11	12	.50422	325.74	19.733	.73381	1.633	1.009	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.60	1.312	.75251	1.733	1.080	PER IMP= 50.00
ADD HYD	PART AP-19A	1&12	40	.53692	345.50	21.046	.73494	1.633	1.005	
COMPUTE NM HYD	AFDP-1	-	89	.00678	1.14	.032	.08829	1.533	.264	PER IMP= .00
ADD HYD	AP-19A	89&40	87	.54370	346.33	21.078	.72688	1.633	.995	
ROUTE RESERVOIR	AP-19B	87	88	.54370	73.64	20.895	.72057	2.366	.212	AC-FT= 12.761
ROUTE MCUNGE	AP-19.R	88	41	.54370	73.63	20.891	.72045	2.400	.212	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.184	.75251	1.733	1.060	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57320	80.16	22.075	.72210	2.200	.219	
ROUTE MCUNGE	AP-21.R	43	44	.57320	80.15	22.073	.72204	2.200	.218	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.01962	23.26	1.220	1.16584	1.667	1.852	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	88.52	23.293	.73673	2.133	.233	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.74	.404	.84406	1.567	1.697	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.70	.404	.84474	1.633	1.690	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.767	.95918	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.74	1.171	.91633	1.533	1.808	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.44	1.166	.91205	1.667	1.724	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.55	1.888	.95918	1.500	2.268	PER IMP= 70.00

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B1
10-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 2B11024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.90	4.330	1.26057	1.833	1.332	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.46	4.318	1.25717	1.866	1.321	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.93	1.411	1.39271	1.567	2.215	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.977	1.26546	1.500	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.88	1.968	1.25921	1.533	2.393	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.53	1.246	1.26265	1.667	1.650	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.53	3.214	1.26054	1.567	1.946	
ADD HYD	PART AP-5	70&88	5	.06680	86.46	4.625	1.29814	1.567	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.19	8.943	1.27803	1.667	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.91	8.933	1.27662	1.667	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	3.077	1.13533	1.600	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.74	12.010	1.23717	1.633	1.388	
ROUTE MCUNGE	AP-7.R	3	4	.18202	159.93	11.988	1.23494	1.667	1.373	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	1.067	1.13676	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	175.12	13.056	1.22629	1.633	1.371	
ROUTE MCUNGE	AP-9.R	26	27	.19962	174.10	13.044	1.22524	1.633	1.363	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	1.179	1.26282	1.667	1.689	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	192.56	14.223	1.22827	1.633	1.386	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.83	2.994	.44547	1.800	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	2.103	.31301	3.333	.025	AC-FT= 2.157
ROUTE	AP-11.R	2	4	.12600	2.02	2.072	.30836	3.800	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.32	1.153	.44685	1.533	.882	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.32	3.226	.34680	1.533	.245	
ROUTE	AP-12.R	5	6	.17440	22.54	3.209	.34502	1.600	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	2.316	1.13676	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.66	5.525	.48728	1.533	.549	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.44	5.517	.48656	1.533	.547	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.01	2.041	.96889	1.567	1.741	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.06	7.558	.56214	1.533	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.00	7.545	.56115	1.567	.725	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.13	.287	.32570	1.700	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.92	7.831	.54668	1.567	.703	
ROUTE MCUNGE	AP-15.R	9	10	.26860	115.04	7.805	.54484	1.600	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.74	1.120	1.13563	1.567	1.836	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.77	8.926	.58291	1.600	.744	
ADD HYD	AP-17	91&30	11	.50422	327.19	23.149	.86081	1.633	1.014	
ROUTE MCUNGE	AP-17.R	11	12	.50422	325.74	23.127	.86002	1.633	1.009	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.60	1.530	.87717	1.733	1.080	PER IMP= 50.00
ADD HYD	PART AP-19A	1&12	40	.53692	345.50	24.657	.86106	1.633	1.005	
COMPUTE NM HYD	AFDP-1	-	89	.00678	1.14	.032	.08829	1.533	.264	PER IMP= .00
ADD HYD	AP-19A	89&40	87	.54370	346.33	24.689	.85142	1.633	.995	
ROUTE RESERVOIR	AP-19B	87	88	.54370	73.64	23.938	.82551	2.366	.212	AC-FT= 12.761
ROUTE MCUNGE	AP-19.R	88	41	.54370	73.63	23.922	.82498	2.400	.212	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.380	.87706	1.733	1.060	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57320	80.16	25.302	.82766	2.200	.219	
ROUTE MCUNGE	AP-21.R	43	44	.57320	80.15	25.296	.82744	2.200	.218	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.01962	23.26	1.456	1.39119	1.667	1.852	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	88.52	26.751	.84610	2.133	.233	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.74	.481	1.00567	1.567	1.697	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.70	.481	1.00447	1.633	1.690	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.909	1.13677	1.500	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.74	1.390	1.08726	1.533	1.808	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.44	1.381	1.08050	1.667	1.724	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.55	2.237	1.13666	1.500	2.268	PER IMP= 70.00

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WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B1
100-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 2B11006.in

RUN DATE (MON/DAY/YR) =12/31/1996
USER NO.= C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.210
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.83	6.047	1.76066	1.800	2.131	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.00	6.026	1.75436	1.867	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.86	1.918	1.89312	1.567	3.443	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	2.751	1.76066	1.500	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.27	2.732	1.74824	1.533	3.747	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.19	1.737	1.76066	1.667	2.634	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.55	4.469	1.75303	1.567	3.058	
ADD HYD	PART_AP-5	70&88	5	.06680	135.41	6.387	1.79287	1.567	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.83	12.413	1.77397	1.633	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.68	12.388	1.77033	1.667	2.045	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.34	4.413	1.62819	1.600	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.46	16.801	1.73064	1.633	2.244	
ROUTE MCUNGE	AP-7.R	3	4	.18202	256.94	16.765	1.72699	1.667	2.206	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	43.00	1.528	1.62820	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	282.30	18.293	1.71828	1.633	2.210	
ROUTE MCUNGE	AP-9.R	26	27	.19962	279.54	18.266	1.71568	1.633	2.188	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.643	1.76066	1.667	2.694	PER IMP= 80.00
ADD HYD	PART_AP-17	27&90	91	.21712	309.09	19.909	1.71930	1.633	2.224	
COMPUTE NM HYD	I40D-1	-	1	.12600	81.66	5.738	.85380	1.800	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.315	.64218	3.400	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.273	.63582	3.667	.060	
COMPUTE NM HYD	I40D-2	-	1	.04840	61.90	2.204	.85380	1.533	1.998	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.92	6.477	.69631	1.533	.555	
ROUTE	AP-12.R	5	6	.17440	56.29	6.455	.69398	1.567	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.31	3.317	1.62819	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.02	9.772	.86184	1.533	1.036	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.53	9.762	.86099	1.567	1.025	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.11	3.067	1.45599	1.567	2.971	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	214.64	12.830	.95422	1.567	1.330	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.71	12.788	.95111	1.567	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.698	.79367	1.700	1.247	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.79	13.486	.94143	1.567	1.279	
ROUTE MCUNGE	AP-15.R	9	10	.26860	204.99	13.383	.93425	1.600	1.192	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.606	1.62819	1.567	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.48	14.990	.97896	1.600	1.309	
ADD HYD	AP-17	91&30	11	.50422	546.95	34.899	1.29776	1.633	1.695	
ROUTE MCUNGE	AP-17.R	11	12	.50422	541.68	34.836	1.29541	1.633	1.679	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.74	2.378	1.36327	1.733	1.899	PER IMP= 50.00
ADD HYD	PART_AP-19A	1&12	40	.53692	576.82	37.213	1.29954	1.633	1.679	
COMPUTE NM HYD	AFDP-1	-	89	.00678	5.94	.167	.46321	1.533	1.369	PER IMP= .00
ADD HYD	AP-19A	89&40	87	.54370	580.93	37.381	1.28911	1.633	1.669	
ROUTE RESERVOIR	AP-19B	87	88	.54370	112.96	36.985	1.27548	2.400	.325	AC-FT= 21.839
ROUTE MCUNGE	AP-19.R	88	41	.54370	112.95	36.974	1.27508	2.400	.325	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.19	2.145	1.36327	1.733	1.864	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57320	125.12	39.119	1.27962	2.167	.341	
ROUTE MCUNGE	AP-21.R	43	44	.57320	125.10	39.114	1.27946	2.167	.341	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.01962	36.26	1.981	1.89312	1.667	2.888	PER IMP= 90.00
ADD HYD	PART_AP-27	44&92	93	.59282	141.12	41.095	1.29977	1.967	.372	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	16.27	.700	1.46313	1.567	2.835	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.18	.699	1.46142	1.633	2.818	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.65	1.303	1.62820	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.57	2.002	1.56576	1.533	3.036	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.56	2.003	1.56711	1.600	3.035	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.46	3.204	1.62819	1.500	3.704	PER IMP= 70.00

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WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B1
100-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 2B110024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
 USER NO.= C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.83	7.068	2.05793	1.800	2.131	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.00	7.041	2.04993	1.866	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.86	2.263	2.23364	1.567	3.442	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	3.227	2.06528	1.500	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.27	3.205	2.05111	1.533	3.747	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.19	2.034	2.06105	1.667	2.634	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.55	5.239	2.05495	1.567	3.058	
ADD HYD	PART AP-5	70&88	5	.06680	135.42	7.502	2.10578	1.567	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.83	14.543	2.07836	1.633	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.68	14.511	2.07385	1.667	2.045	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.34	5.130	1.89259	1.600	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.48	19.641	2.02324	1.633	2.245	
ROUTE MCUNGE	AP-7.R	3	4	.18202	256.97	19.597	2.01872	1.667	2.206	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.779	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	282.31	21.376	2.00779	1.633	2.210	
ROUTE MCUNGE	AP-9.R	26	27	.19962	279.54	21.342	2.00462	1.633	2.188	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.924	2.06130	1.667	2.694	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	309.09	23.266	2.00919	1.633	2.224	
COMPUTE NM HYD	I40D-1	-	1	.12600	81.66	6.363	.94687	1.800	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.574	.68061	3.400	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.522	.67299	3.666	.060	
COMPUTE NM HYD	I40D-2	-	1	.04840	61.91	2.449	.94889	1.533	1.999	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.93	6.972	.74956	1.533	.555	
ROUTE	AP-12.R	5	6	.17440	56.29	6.945	.74665	1.567	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.31	3.860	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.03	10.805	.95294	1.533	1.036	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.56	10.792	.95178	1.567	1.026	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.12	3.523	1.67219	1.567	2.972	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	214.69	14.315	1.06466	1.567	1.331	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.72	14.269	1.06127	1.567	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.722	.81997	1.700	1.247	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.80	14.991	1.04645	1.567	1.279	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.22	14.882	1.03885	1.600	1.194	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.868	1.89304	1.567	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.72	16.750	1.09389	1.600	1.310	
ADD HYD	AP-17	91&30	11	.50422	547.08	40.016	1.48802	1.633	1.695	
ROUTE MCUNGE	AP-17.R	11	12	.50422	541.81	39.945	1.48539	1.633	1.679	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.74	2.704	1.55037	1.733	1.899	PER IMP= 50.00
ADD HYD	PART AP-19A	1&12	40	.53692	576.95	42.648	1.48934	1.633	1.679	
COMPUTE NM HYD	AFDP-1	-	89	.00678	5.94	.168	.46324	1.533	1.369	PER IMP= .00
ADD HYD	AP-19A	89&40	87	.54370	581.05	42.816	1.47655	1.633	1.670	
ROUTE RESERVOIR	AP-19B	87	88	.54370	112.97	41.336	1.42550	2.400	.325	AC-FT= 21.842
ROUTE MCUNGE	AP-19.R	88	41	.54370	112.96	41.308	1.42453	2.400	.325	CCODE = .2
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.19	2.439	1.55021	1.733	1.864	PER IMP= 50.00
ADD HYD	AP-21	41&42	43	.57320	125.13	43.747	1.43100	2.166	.341	
ROUTE MCUNGE	AP-21.R	43	44	.57320	125.11	43.736	1.43065	2.166	.341	CCODE = .2
COMPUTE NM HYD	D3-D&AP-22	-	92	.01962	36.27	2.335	2.23135	1.667	2.888	PER IMP= 90.00
ADD HYD	PART AP-27	44&92	93	.59282	141.13	46.071	1.45715	1.966	.372	
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	16.28	.816	1.70570	1.567	2.835	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.18	.814	1.70175	1.633	2.819	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.516	1.89474	1.500	3.817	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.58	2.330	1.82252	1.533	3.036	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.25	2.326	1.81956	1.600	3.015	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.45	3.729	1.89459	1.500	3.703	PER IMP= 70.00

[illegible]

APPENDIX B-6

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

AHYMO SUMMARY TABLES

ALTERNATIVE 2B3

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B3
10-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 2B3106.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.92	3.650	1.06261	1.832	1.333	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.48	3.643	1.06064	1.865	1.322	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.90	1.181	1.16592	1.565	2.212	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.660	1.06261	1.499	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.81	1.654	1.05816	1.532	2.390	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.52	1.048	1.06261	1.665	1.649	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.55	2.702	1.05986	1.565	1.947	
ADD HYD	PART AP-5	70&88	5	.06680	86.45	3.883	1.09002	1.565	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.22	7.526	1.07560	1.665	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.92	7.519	1.07459	1.665	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	2.600	.95929	1.598	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.81	10.119	1.04239	1.632	1.389	
ROUTE MCUNGE	AP-7.R	3	4	.18202	160.06	10.105	1.04090	1.665	1.374	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	.900	.95928	1.499	2.338	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	175.17	11.005	1.03370	1.632	1.371	
ROUTE MCUNGE	AP-9.R	26	27	.19962	174.08	10.998	1.03299	1.632	1.363	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	.992	1.06260	1.665	1.690	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	192.63	11.989	1.03537	1.665	1.386	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.85	2.579	.38378	1.798	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	1.932	.28749	3.363	.025	AC-FT= 2.159
ROUTE	AP-11.R	2	4	.12600	2.02	1.907	.28385	3.796	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.39	.991	.38378	1.532	.884	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.39	2.898	.31158	1.532	.245	
ROUTE	AP-12.R	5	6	.17440	22.58	2.886	.31026	1.598	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	1.954	.95929	1.499	2.338	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.81	4.840	.42687	1.532	.550	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.57	4.834	.42636	1.532	.548	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.10	1.738	.82497	1.565	1.744	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.11	6.572	.48882	1.532	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.10	6.558	.48778	1.565	.726	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.14	.271	.30837	1.698	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.99	6.830	.47676	1.565	.704	
ROUTE MCUNGE	AP-15.R	9	10	.26860	114.98	6.804	.47497	1.598	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.77	.946	.95929	1.598	1.838	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.74	7.751	.50618	1.598	.744	
ADD HYD	AP-17	91&30	11	.50422	327.46	19.740	.73405	1.632	1.015	
ROUTE MCUNGE	AP-17.R	11	12	.50422	325.87	19.727	.73358	1.632	1.010	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.61	1.313	.75265	1.732	1.080	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	345.54	21.040	.73474	1.632	1.006	
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.184	.75265	1.732	1.060	PER IMP= 50.00
ADD HYD	AP-21	40&42	43	.56642	362.43	22.224	.73568	1.632	1.000	
COMPUTE NM HYD	D3-D&AP-22	-	92	.00432	7.71	.269	1.16592	1.499	2.789	PER IMP= 90.00
ADD HYD	AP-22A	43&92	80	.57074	366.93	22.493	.73893	1.632	1.005	
COMPUTE NM HYD	AFDP-1	-	81	.01530	2.59	.072	.08863	1.532	.265	PER IMP= .00
ADD HYD	AP-22B	80&81	82	.58604	368.83	22.565	.72195	1.632	.983	
ROUTE RESERVOIR	AP-22C	82	83	.58604	33.77	20.650	.66070	2.697	.090	AC-FT= 16.597
ROUTE MCUNGE	AP-22C.R	83	44	.58604	33.77	20.645	.66051	2.697	.090	CCODE = .2
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.75	.404	.84422	1.565	1.698	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.72	.403	.84291	1.632	1.693	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.767	.95929	1.499	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.62	1.171	.91571	1.532	1.801	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.41	1.164	.91087	1.665	1.721	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.49	1.888	.95929	1.499	2.265	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	63.41	3.052	.94021	1.532	1.628	

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WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B3
10-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 2B31024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
USER NO.= C_ANDRSN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.770
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	54.92	4.330	1.26055	1.832	1.333	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	54.48	4.319	1.25736	1.865	1.322	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	26.90	1.411	1.39267	1.565	2.212	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	48.04	1.977	1.26545	1.499	2.562	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	44.81	1.969	1.25978	1.532	2.390	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	19.52	1.246	1.26263	1.665	1.649	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	59.55	3.214	1.26089	1.565	1.947	
ADD HYD	PART AP-5	70&88	5	.06680	86.45	4.626	1.29837	1.565	2.022	
ADD HYD	AP-5	5& 2	89	.13120	107.22	8.944	1.27824	1.665	1.277	
ROUTE MCUNGE	AP-5.R	89	2	.13120	106.92	8.933	1.27660	1.665	1.273	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	57.09	3.077	1.13535	1.598	1.755	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	161.81	12.010	1.23716	1.632	1.389	
ROUTE MCUNGE	AP-7.R	3	4	.18202	160.06	11.990	1.23505	1.665	1.374	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	26.34	1.067	1.13678	1.499	2.338	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	175.17	13.057	1.22639	1.632	1.371	
ROUTE MCUNGE	AP-9.R	26	27	.19962	174.08	13.044	1.22523	1.632	1.363	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	18.92	1.179	1.26280	1.665	1.690	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	192.63	14.223	1.22826	1.665	1.386	
COMPUTE NM HYD	I40D-1	-	1	.12600	37.85	2.995	.44570	1.798	.469	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	2.04	2.104	.31304	3.363	.025	AC-FT= 2.159
ROUTE	AP-11.R	2	4	.12600	2.02	2.072	.30839	3.796	.025	
COMPUTE NM HYD	I40D-2	-	1	.04840	27.39	1.154	.44708	1.532	.884	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	27.39	3.226	.34688	1.532	.245	
ROUTE	AP-12.R	5	6	.17440	22.58	3.210	.34511	1.598	.202	
COMPUTE NM HYD	C4-D	-	1	.03820	57.17	2.316	1.13678	1.499	2.338	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	74.81	5.526	.48735	1.532	.550	
ROUTE MCUNGE	AP-13.R	4	6	.21260	74.57	5.517	.48659	1.532	.548	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	44.10	2.041	.96894	1.565	1.744	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	118.11	7.558	.56216	1.532	.732	
ROUTE MCUNGE	AP-14.R	7	8	.25210	117.10	7.541	.56089	1.565	.726	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	5.14	.287	.32589	1.698	.486	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	120.99	7.828	.54645	1.565	.704	
ROUTE MCUNGE	AP-15.R	9	10	.26860	114.98	7.795	.54417	1.598	.669	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	21.77	1.121	1.13565	1.598	1.838	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	136.74	8.916	.58229	1.598	.744	
ADD HYD	AP-17	91&30	11	.50422	327.46	23.139	.86044	1.632	1.015	
ROUTE MCUNGE	AP-17.R	11	12	.50422	325.87	23.119	.85972	1.632	1.010	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	22.61	1.530	.87724	1.732	1.080	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	345.54	24.649	.86078	1.632	1.006	
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	20.00	1.380	.87713	1.732	1.060	PER IMP= 50.00
ADD HYD	AP-21	40&42	43	.56642	362.43	26.029	.86163	1.632	1.000	
COMPUTE NM HYD	D3-D&AP-22	-	92	.00432	7.71	.321	1.39414	1.499	2.789	PER IMP= 90.00
ADD HYD	AP-22A	43&92	80	.57074	366.93	26.350	.86567	1.632	1.005	
COMPUTE NM HYD	AFDP-1	-	81	.01530	2.59	.072	.08863	1.532	.265	PER IMP= .00
ADD HYD	AP-22B	80&81	82	.58604	368.83	26.423	.84538	1.632	.983	
ROUTE RESERVOIR	AP-22C	82	83	.58604	33.77	22.964	.73472	2.697	.090	AC-FT= 16.597
ROUTE MCUNGE	AP-22C.R	83	44	.58604	33.77	22.955	.73444	2.697	.090	CCODE = .2
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	9.75	.481	1.00574	1.565	1.698	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	9.72	.480	1.00255	1.632	1.693	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	22.45	.909	1.13678	1.499	2.339	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	27.62	1.389	1.08655	1.532	1.801	
ROUTE MCUNGE	AP-24.R	48	49	.02397	26.41	1.380	1.07921	1.665	1.721	CCODE = .1
COMPUTE NM HYD	D5-D	-	50	.03690	53.49	2.237	1.13668	1.499	2.265	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	63.41	3.617	1.11405	1.532	1.628	

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B3
100-YEAR 6-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 2B31006.IN

RUN DATE (MON/DAY/YR) =12/19/1996
 USER NO.= C_ANDRSN.IO1

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.210
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.79	6.047	1.76064	1.798	2.130	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.02	6.025	1.75413	1.865	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.82	1.918	1.89310	1.565	3.439	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	2.751	1.76064	1.499	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.19	2.728	1.74593	1.532	3.743	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.17	1.737	1.76064	1.665	2.633	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.57	4.465	1.75161	1.565	3.059	
ADD HYD	PART AP-5	70&88	5	.06680	135.40	6.384	1.79185	1.565	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.80	12.409	1.77333	1.632	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.62	12.385	1.76991	1.665	2.044	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.33	4.413	1.62818	1.598	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.49	16.798	1.73034	1.632	2.245	
ROUTE MCUNGE	AP-7.R	3	4	.18202	257.03	16.764	1.72686	1.665	2.206	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.528	1.62818	1.499	3.816	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	282.24	18.292	1.71816	1.632	2.209	
ROUTE MCUNGE	AP-9.R	26	27	.19962	279.35	18.262	1.71535	1.632	2.187	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.643	1.76064	1.665	2.694	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	308.85	19.906	1.71900	1.632	2.223	
COMPUTE NM HYD	I40D-1	-	1	.12600	81.68	5.737	.85377	1.798	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.313	.64183	3.397	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.270	.63546	3.663	.060	
COMPUTE NM HYD	I40D-2	-	1	.04840	61.97	2.204	.85377	1.532	2.001	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.98	6.474	.69604	1.532	.555	
ROUTE	AP-12.R	5	6	.17440	56.23	6.452	.69371	1.565	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.29	3.317	1.62818	1.499	3.816	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.10	9.770	.86161	1.532	1.037	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.79	9.761	.86089	1.565	1.027	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.23	3.067	1.45598	1.565	2.976	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	215.03	12.829	.95413	1.565	1.333	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.73	12.788	.95110	1.565	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.698	.79368	1.698	1.248	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.74	13.486	.94143	1.565	1.278	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.00	13.389	.93465	1.598	1.193	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.606	1.62818	1.598	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.55	14.996	.97934	1.598	1.309	
ADD HYD	AP-17	91&30	11	.50422	547.21	34.901	1.29784	1.632	1.696	
ROUTE MCUNGE	AP-17.R	11	12	.50422	541.70	34.839	1.29553	1.632	1.679	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.76	2.378	1.36326	1.732	1.900	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	576.68	37.217	1.29966	1.632	1.678	
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.18	2.145	1.36326	1.732	1.863	PER IMP= 50.00
ADD HYD	AP-21	40&42	43	.56642	606.81	39.361	1.30297	1.632	1.674	
COMPUTE NM HYD	D3-D&AP-22	-	92	.00432	11.92	.436	1.89310	1.499	4.310	PER IMP= 90.00
ADD HYD	AP-22A	43&92	80	.57074	613.82	39.798	1.30743	1.632	1.680	
COMPUTE NM HYD	AF0P-1	-	81	.01530	13.41	.378	.46317	1.532	1.369	PER IMP= .00
ADD HYD	AP-22B	80&81	82	.58604	623.15	40.176	1.28539	1.632	1.661	
ROUTE RESERVOIR	AP-22C	82	83	.58604	54.75	36.744	1.17560	2.731	.146	AC-FT= 28.369
ROUTE MCUNGE	AP-22C.R	83	44	.58604	54.75	36.734	1.17527	2.731	.146	CCODE = .2
COMPUTE NM HYD	I40D-3&AP-23	-	45	.00897	16.29	.700	1.46310	1.565	2.837	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.20	.700	1.46242	1.632	2.822	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.303	1.62818	1.499	3.816	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.61	2.002	1.56613	1.532	3.038	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.30	2.002	1.56608	1.598	3.018	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.35	3.204	1.62818	1.499	3.699	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	127.50	5.206	1.60371	1.532	3.273	

[illegible]

WEST MESA DIVERSION PROJECT -- DRAINAGE ANALYSIS
AHYMO SUMMARY TABLE - ALTERNATIVE 2B3
100-YEAR 24-HOUR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = 28310024.IN

RUN DATE (MON/DAY/YR) =12/19/1996
 USER NO. = C_ANDRSN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	A1-D&AP-1	-	1	.06440	87.79	7.068	2.05777	1.798	2.130	PER IMP= 80.00
ROUTE MCUNGE	AP-1.R	1	2	.06440	86.02	7.039	2.04953	1.865	2.087	CCODE = .2
COMPUTE NM HYD	B3-D&AP-2	-	88	.01900	41.82	2.263	2.23346	1.565	3.439	PER IMP= 90.00
COMPUTE NM HYD	B1-D&AP-3	-	1	.02930	76.13	3.227	2.06513	1.499	4.060	PER IMP= 80.00
ROUTE MCUNGE	AP-3.R	1	3	.02930	70.19	3.201	2.04858	1.532	3.743	CCODE = .2
COMPUTE NM HYD	B2-D	-	1	.01850	31.17	2.033	2.06089	1.665	2.633	PER IMP= 80.00
ADD HYD	AP-4	1& 3	70	.04780	93.57	5.235	2.05334	1.565	3.059	
ADD HYD	PART AP-5	70&88	5	.06680	135.40	7.498	2.10457	1.565	3.167	
ADD HYD	AP-5	5& 2	89	.13120	172.80	14.537	2.07756	1.632	2.058	
ROUTE MCUNGE	AP-5.R	89	2	.13120	171.62	14.507	2.07324	1.665	2.044	CCODE = .2
COMPUTE NM HYD	C1-D&AP-6	-	1	.05082	93.33	5.129	1.89245	1.598	2.870	PER IMP= 70.00
ADD HYD	AP-7	1& 2	3	.18202	261.49	19.636	2.02277	1.632	2.245	
ROUTE MCUNGE	AP-7.R	3	4	.18202	257.03	19.594	2.01841	1.665	2.206	CCODE = .2
COMPUTE NM HYD	C2-D&AP-8	-	25	.01760	42.99	1.778	1.89461	1.499	3.816	PER IMP= 70.00
ADD HYD	AP-9	25& 4	26	.19962	282.24	21.373	2.00750	1.632	2.209	
ROUTE MCUNGE	AP-9.R	26	27	.19962	279.35	21.336	2.00410	1.632	2.187	CCODE = .2
COMPUTE NM HYD	C3-D&AP-10	-	90	.01750	30.18	1.924	2.06114	1.665	2.694	PER IMP= 80.00
ADD HYD	PART AP-17	27&90	91	.21712	308.85	23.260	2.00870	1.632	2.223	
COMPUTE NM HYD	I400-1	-	1	.12600	81.68	6.362	.94676	1.798	1.013	PER IMP= 25.00
ROUTE RESERVOIR	AP-11	1	2	.12600	4.84	4.571	.68023	3.397	.060	AC-FT= 4.689
ROUTE	AP-11.R	2	4	.12600	4.81	4.520	.67259	3.663	.060	
COMPUTE NM HYD	I400-2	-	1	.04840	61.97	2.449	.94879	1.532	2.001	PER IMP= 25.00
ADD HYD	AP-12	1& 4	5	.17440	61.98	6.969	.74924	1.532	.555	
ROUTE	AP-12.R	5	6	.17440	56.23	6.942	.74634	1.565	.504	
COMPUTE NM HYD	C4-D	-	1	.03820	93.29	3.860	1.89461	1.499	3.816	PER IMP= 70.00
ADD HYD	AP-13	1& 6	4	.21260	141.10	10.802	.95266	1.532	1.037	
ROUTE MCUNGE	AP-13.R	4	6	.21260	139.79	10.790	.95161	1.565	1.027	CCODE = .2
COMPUTE NM HYD	C5-D	-	1	.03950	75.23	3.523	1.67209	1.565	2.976	PER IMP= 57.00
ADD HYD	AP-14	1& 6	7	.25210	215.03	14.313	1.06450	1.565	1.333	
ROUTE MCUNGE	AP-14.R	7	8	.25210	209.73	14.268	1.06119	1.565	1.300	CCODE = .2
COMPUTE NM HYD	C6-D	-	1	.01650	13.17	.722	.81997	1.698	1.248	PER IMP= 7.00
ADD HYD	AP-15	1& 8	9	.26860	219.74	14.990	1.04637	1.565	1.278	
ROUTE MCUNGE	AP-15.R	9	10	.26860	205.00	14.883	1.03895	1.598	1.193	CCODE = .2
COMPUTE NM HYD	C7-D	-	1	.01850	35.55	1.868	1.89290	1.598	3.002	PER IMP= 70.00
ADD HYD	AP-16	1&10	30	.28710	240.55	16.751	1.09398	1.598	1.309	
ADD HYD	AP-17	91&30	11	.50422	547.21	40.011	1.48786	1.632	1.696	
ROUTE MCUNGE	AP-17.R	11	12	.50422	541.70	39.941	1.48527	1.632	1.679	CCODE = .2
COMPUTE NM HYD	D1-D&AP-18	-	1	.03270	39.76	2.704	1.55027	1.732	1.900	PER IMP= 50.00
ADD HYD	AP-19	1&12	40	.53692	576.68	42.645	1.48923	1.632	1.678	
COMPUTE NM HYD	D2-D&AP-20	-	42	.02950	35.18	2.439	1.55011	1.732	1.863	PER IMP= 50.00
ADD HYD	AP-21	40&42	43	.56642	606.81	45.084	1.49240	1.632	1.674	
COMPUTE NM HYD	D3-D&AP-22	-	92	.00432	11.92	.515	2.23567	1.499	4.310	PER IMP= 90.00
ADD HYD	AP-22A	43&92	80	.57074	613.82	45.599	1.49802	1.632	1.680	
COMPUTE NM HYD	AFDP-1	-	81	.01530	13.41	.378	.46317	1.532	1.369	PER IMP= .00
ADD HYD	AP-22B	80&81	82	.58604	623.15	45.977	1.47101	1.632	1.661	
ROUTE RESERVOIR	AP-22C	82	83	.58604	54.75	40.274	1.28853	2.731	.146	AC-FT= 28.369
ROUTE MCUNGE	AP-22C.R	83	44	.58604	54.75	40.259	1.28807	2.731	.146	CCODE = .2
COMPUTE NM HYD	I400-3&AP-23	-	45	.00897	16.29	.816	1.70555	1.565	2.837	PER IMP= 64.00
ROUTE MCUNGE	AP-23.R	45	46	.00897	16.20	.814	1.70253	1.632	2.822	CCODE = .2
COMPUTE NM HYD	D4-D	-	47	.01500	36.64	1.516	1.89461	1.499	3.816	PER IMP= 70.00
ADD HYD	AP-24	47&46	48	.02397	46.61	2.330	1.82273	1.532	3.038	
ROUTE MCUNGE	AP-24.R	48	49	.02397	46.30	2.327	1.81995	1.598	3.018	CCODE = .2
COMPUTE NM HYD	D5-D	-	50	.03690	87.35	3.728	1.89446	1.499	3.699	PER IMP= 70.00
ADD HYD	AP-25	50&49	51	.06087	127.50	6.055	1.86511	1.532	3.273	

[illegible]

APPENDIX C

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

**DETENTION POND STAGE STORAGE
DISCHARGE DATA**

ALTERNATIVE 2A1**CEDAR RIDGE DETENTION POND****STAGE/ STORAGE AND
DISCHARGE CURVE**

ELEVATION (FT.)	STORAGE (AC.FT.)	OUTFLOW (CFS)
5,088.0	0.00	0
5,089.0	2.10	7
5,090.0	4.29	21
5,091.0	6.56	44
5,092.0	8.93	66
5,093.0	11.40	85
5,094.0	13.96	100
5,095.0	16.62	111
5,096.0	19.38	130
5,097.0	22.23	135
5,098.0	25.19	150
5,099.0	28.26	155
5,100.0	31.43	165

ALTERNATIVE 2B1**AMERICAN FURNITURE DETENTION POND****STAGE/ STORAGE AND
DISCHARGE CURVE**

ELEVATION (FT.)	STORAGE (AC.FT.)	OUTFLOW (CFS)
5,087.5	0.00	0
5,088.0	1.22	6
5,089.0	3.74	13
5,090.0	6.36	30
5,091.0	9.07	50
5,092.0	11.88	70
5,093.0	14.78	82
5,094.0	17.79	98
5,095.0	20.89	110
5,096.0	24.10	120
5,097.0	27.41	130
5,098.0	30.82	140
5,099.0	34.35	147

ALTERNATIVE 2B3**AMERICAN FURNITURE DETENTION POND****STAGE/ STORAGE AND
DISCHARGE CURVE**

ELEVATION (FT.)	STORAGE (AC.FT.)	OUTFLOW (CFS)
5,087.5	0.00	0
5,088.0	3.33	6
5,089.0	10.13	18
5,090.0	17.10	35
5,091.0	24.25	48
5,092.0	31.57	60
5,093.0	39.07	70
5,094.0	46.75	80
5,095.0	54.61	85
5,096.0	62.65	90
5,097.0	70.88	100
5,098.0	79.30	108
5,099.0	87.90	110

APPENDIX D

WEST MESA DIVERSION PROJECT

DRAINAGE ANALYSIS

**CEDAR RIDGE SUBDIVISION
RETENTION POND EASEMENT**

94130925

5092

450492

DATE: September 28th, 1994

4972.E1

PERMANENT EASEMENT

Grant of Permanent Easement, between Westland Development Co., Inc. ("Grantor"), whose address is 401 Coors Blvd. N.W., Albuquerque, New Mexico, 87121 and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103.

Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("property") for the construction, installation, maintenance, repair, modification, replacement and operation of INTERIM RETENTION POND DEPICTED ON EXH. B together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the Easement.

Grantor covenants and warrants that Grantor is the owner in fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

WITNESS my hand and seal this 29 day of September, 1994.

GRANTOR:

OFFICIAL SEAL

LINDA J. BLAIR

NOTARY PUBLIC STATE OF NEW MEXICO (Individual)

Notary Public and with Seal

My Comm. Exp. 3/3/97

GRANTOR

By:

Its

Barbara Page Westland Dev Co Inc.
President & CEO
(Corporation or Partnership)

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

1994 NOV -1 PM 2:38

94-30-6092
BK
JUDY
GO. CLE
6094

EXHIBIT "A"

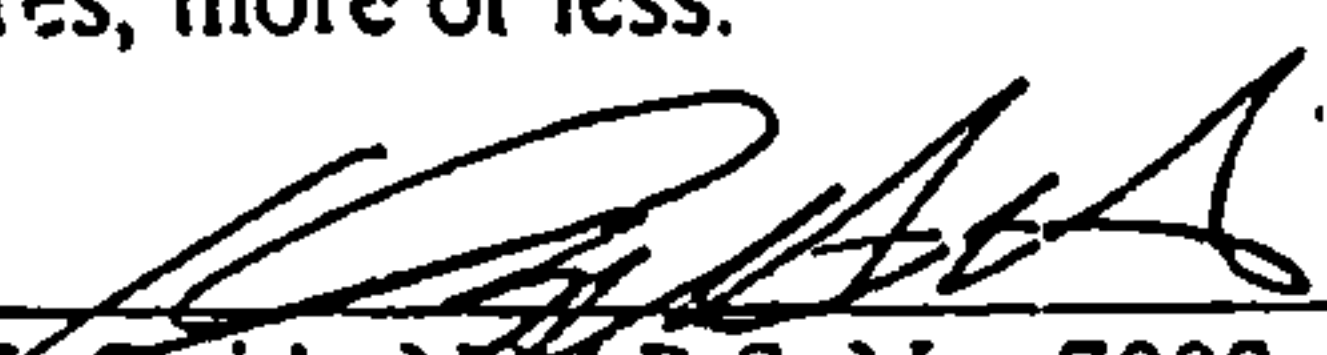
5093

DOUG SMITH SURVEYING, INC.
2121 SAN MATEO BLVD., N.E.
ALBUQUERQUE, NEW MEXICO
87110
(505) 255 4477

PERMANENT EASEMENT:

LEGAL DESCRIPTION:

A certain parcel of land being the Easterly 230.00 feet of Lot 1-C, Tract S-2, ATRISCO BUSINESS PARK, Albuquerque, New Mexico, as the same is shown and designated on the plat thereof, filed in the office of the County Clerk of Bernalillo County, New Mexico, on June 11, 1979, in Vol. D-9, Folio 139, and being more particularly described as follows: Beginning at the Southeast corner of said Lot 1-C, said corner being common to the Northeast corner of Lot 2, ATRISCO BUSINESS PARK, filed September 12, 1973, whence "ACS" "7-110" bears S. 33 deg. 32' 34" E., 686.27 feet distance, thence running from said beginning corner S. 85 deg. 02' 49" W., 231.09 feet distance to the Southwest corner of the parcel herein described, said corner being a point on the Northerly line of said Lot 2, and common to the Southeast corner of said Lot 1-C, thence N. 00 deg. 37' 01" E., 560.27 feet distance to the Northwest corner of the parcel herein described, said corner being a point on the Southerly Right-of-Way line of Fortuna Road, N.W., thence S. 89 deg. 23' 53" E., 230.00 feet distance along the Southerly Right-of-Way line of Fortuna Road, N.W. to the Northeast corner of the parcel herein described, said corner being common to the Northwest corner of Tract Q-5, ATRISCO BUSINESS PARK, filed May 12, 1986, Vol. C-30, Folio 103, thence S. 00 deg. 37' 01" W., 537.90 feet distance along the Easterly boundary of said Lot 1-C and the Westerly boundary of Tract Q-5 and Q-4 to the Southeast corner of the parcel herein described and point of beginning and containing 2.8992 acres, more or less.


Douglas H. Smith, N.M.P.S. No. 7002

SET REBAR
7002

FORTUNA ROAD, N.W.
60' R.O.W.

FOUND REBAR

LOT 1-C. TRACT S-2. ATRISCO BUSINESS PARK
FILED 6/11/1979, VOL. D-9, FOLIO 139

LOT 1-A. TRACT S-2. ATRISCO BUSINESS PARK
FILED 6/11/1979, VOL. D-9, FOLIO 139

N 00°37'01" E

560.27'

S 89°23'53" E 230.00'
7' UTIL ESMT.

DRAINAGE EASEMENT
2.8992 ACRES

ESMT.

537.90'

UTIL.

20'

S 00°37'01" W

TRACT Q-5. ATRISCO BUSINESS PARK
FILED 5/12/1986, VOL. C-30, FOLIO 103

TRACT Q-4. ATRISCO BUSINESS PARK
FILED 5/12/1986, VOL. C-30, FOLIO 103

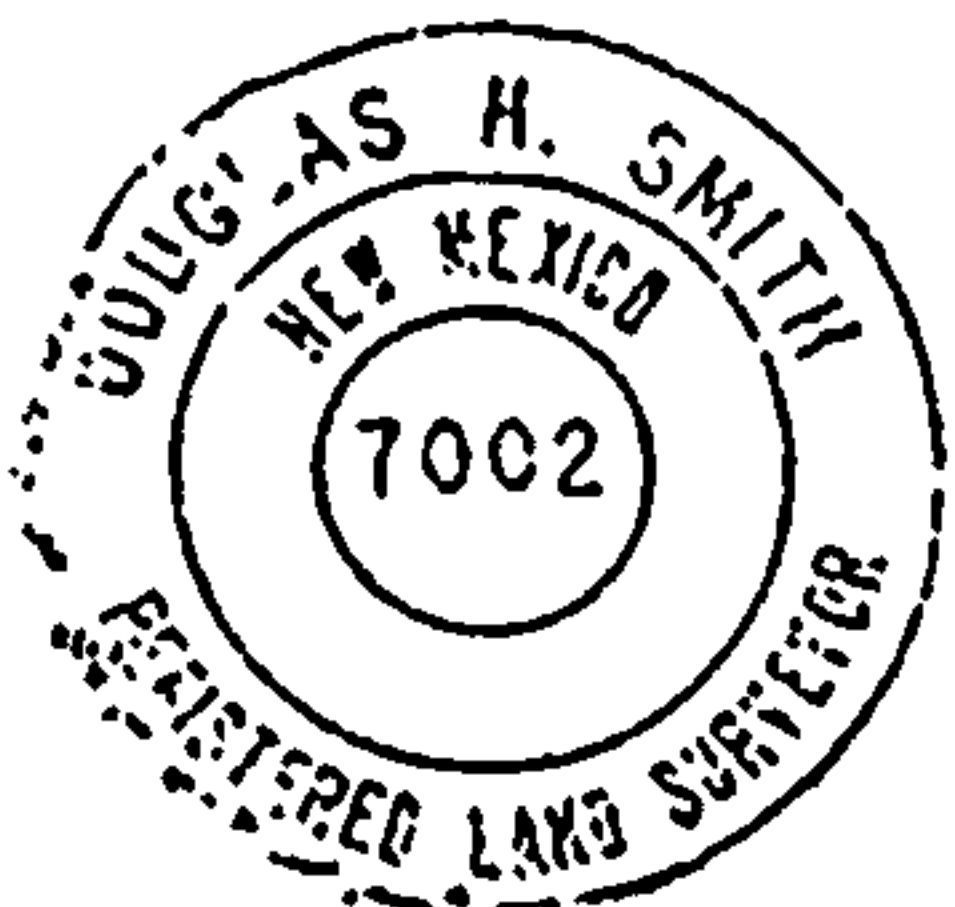
SCALE 1" = 60'
LS-16-30B

SET REBAR
7002

LOT 2. ATRISCO BUSINESS PARK
FILED 9/12/1973, VOL. D-5, FOLIO 181

FOUND REBAR

BASIS OF BEARING
"ACS 7-J10 & ACS 18-J11"



"7-J10 1989", ACS ALUMINUM CAP
Y = 1,488,758.43
X = 362,370.40
NEW MEXICO STATE PLANE COORDINATES (NAD 1927)
GROUND-TO-GRID FACTOR 0.99967767
DELTA ALPHA -0°15'52"
ELEVATION 5103.23'

EXHIBIT "B"

Lawrence Rael
Chief Administrative Officer

10/11/94
City Engineer

Dated:

10/31/94

5099

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss.

This instrument was acknowledged before me this 26th day of Sept, 1994 by [name of person:] BARBARA PAGE [title or capacity, for instance, "President" or "Owner"] PRESIDENT + C.E.O. of [name of company "corporation" or partnership] WESTLAND DEVELOPMENT CO. INC.

M. Helen Sanchez
Notary Public

My Commission Expires:

5-17-95

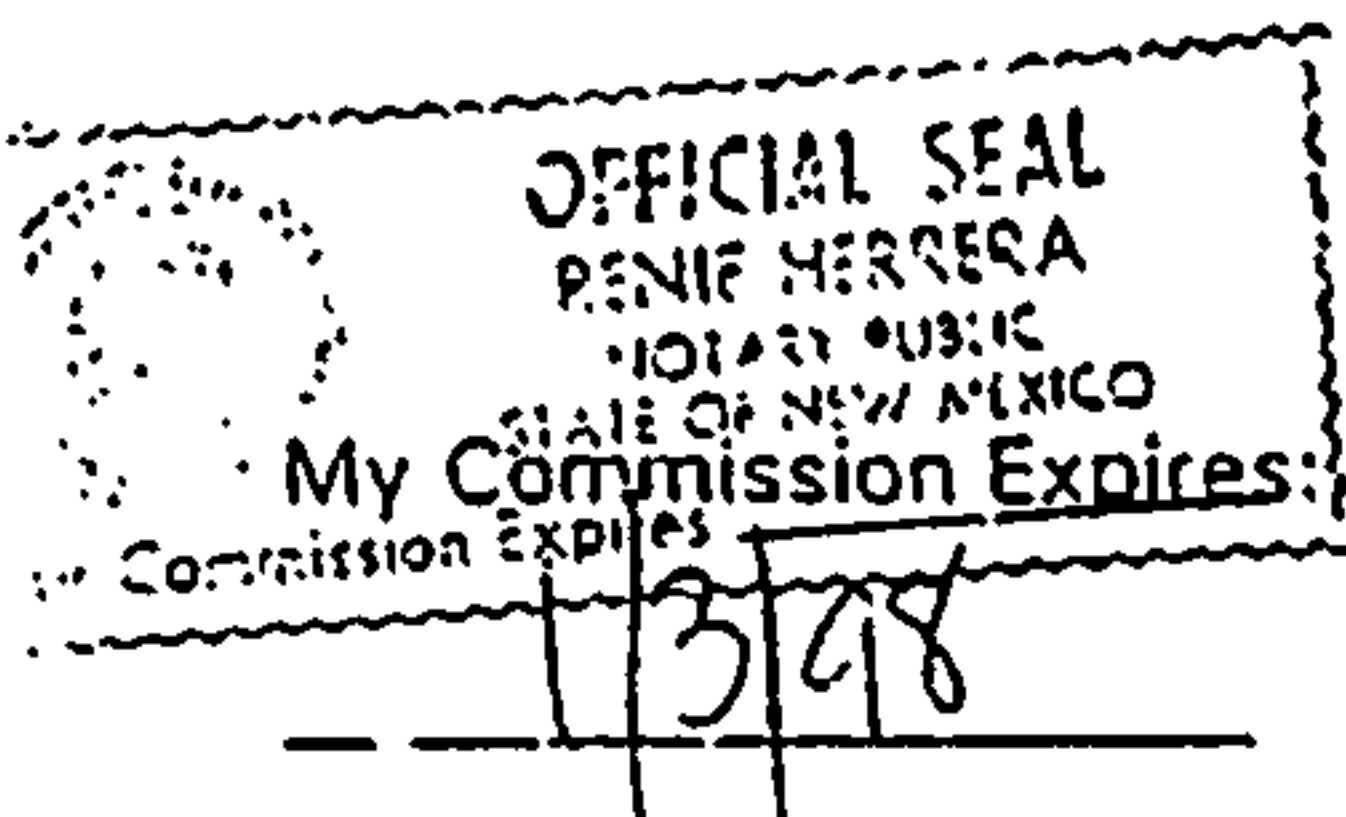


My Commission Expires 5-17-95

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss.

This instrument was acknowledged before me this 31st day of October, 1994 by Lawrence Rael, Chief Administrative Officer of the City of Albuquerque, a municipal corporation on behalf of said corporation.

Renie Herrera
Notary Public



Approved as to form by
Legal Department 5/17/94

5100

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss.

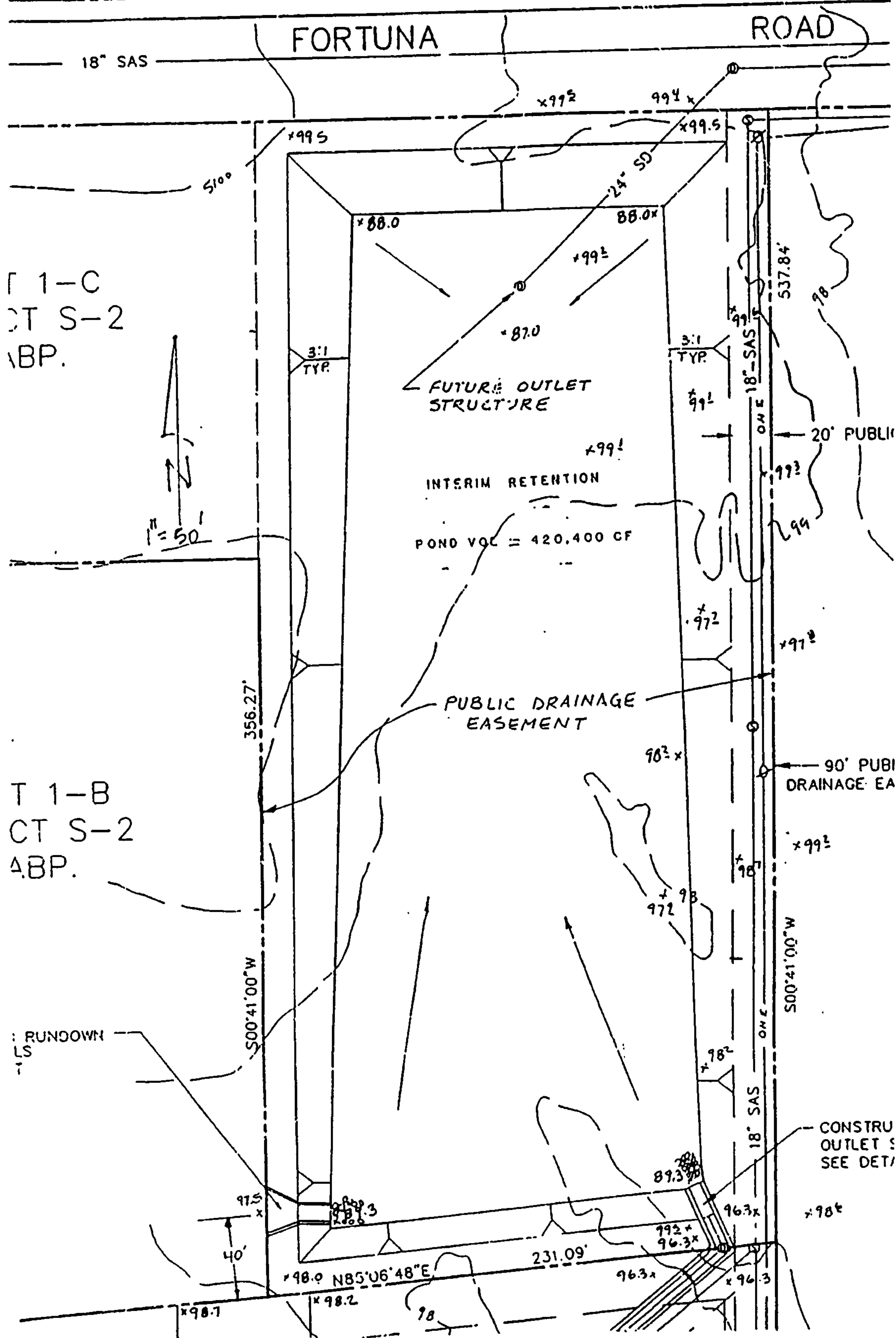
This instrument was acknowledged before me this 21st day of October, 1994
by Robert E. Gurule, Director of Public Works Department of the City of Albuquerque, a
municipal corporation on behalf of said corporation.

Felicia T. Tison
Notary Public

My Commission Expires:

1-27-98

EXHIBIT 'A'
 INTERIM RETENTION POND
 LOT 1-C, TRACT S-2, ATRISCO BUSINESS PARK 101
 CITY PROJECT NO. 4972.90



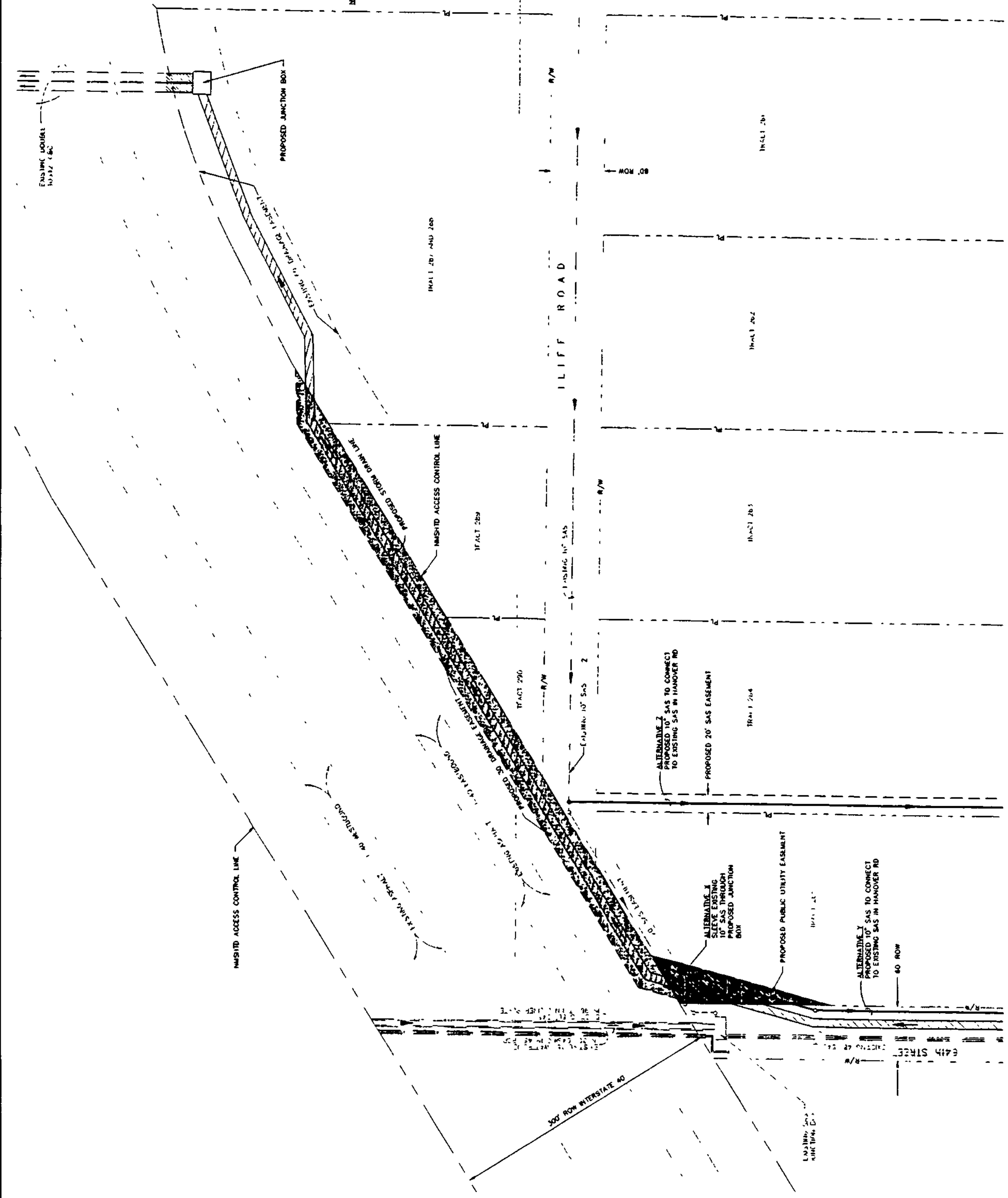
LEGEND:

- PROPOSED STORM DRAIN
- PROPOSED SAS LINE
- EXISTING SAS LINE
- EXISTING C&G
- EXISTING EASEMENT BOUNDARY
- EXISTING RIGHT OF WAY
- PROPOSED DRAINAGE EASEMENT
- PROPOSED PUBLIC UTILITY EASEMENT

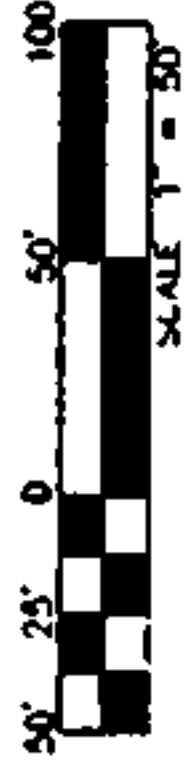
ALTERNATIVE	DESCRIPTION
X	SLEEVE THE EXISTING 10" SAS THROUGH PROPOSED STORM DRAIN JUNCTION BOX
Y	REALIGN THE EXISTING 10" SAS THROUGH A PROPOSED STORM DRAIN JUNCTION BOX AND EASEMENT TO PROPOSED STORM LINE IN 04th ST TO HANOVER RD
Z	REALIGN THE EXISTING 10" SAS THROUGH A PROPOSED 20" SAS EASEMENT THROUGH TRACT 284 TO HANOVER RD

A CONFLICT EXISTS BETWEEN THE PROPOSED STORM DRAIN LINE AND THE EXISTING SAS LINE AT THE JUNCTION BOX. ALTERNATIVE SOLUTIONS (X, Y AND Z) ARE PROPOSED AS SOLUTIONS TO THE CONFLICT.

NOTE:



STATE HIGHWAY DEPARTMENT EASEMENT
AREA REQUIRED = 22,940.50 FT = 0.5268 AC



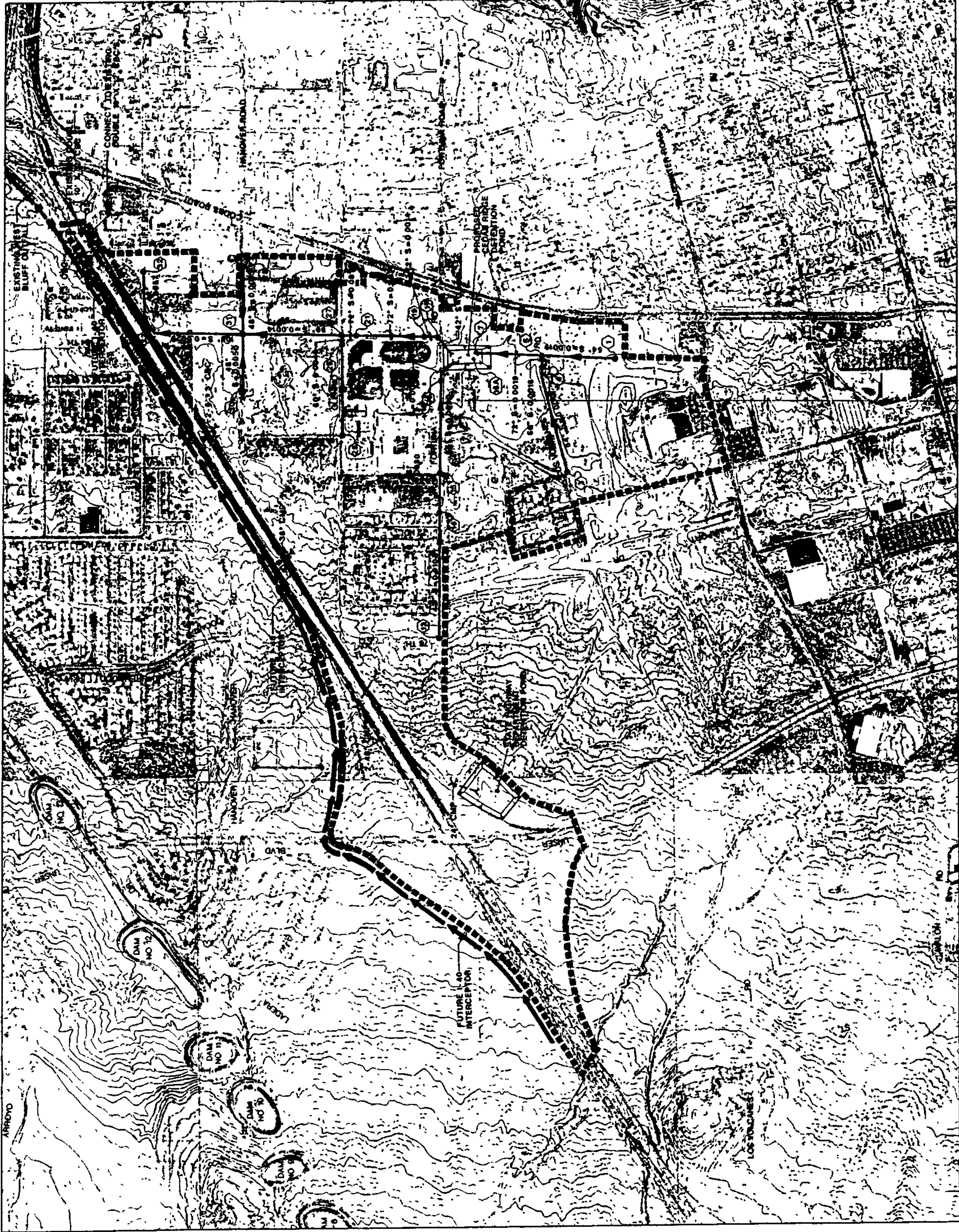
Smith Engineering Company

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
HYDROLOGIST DIVISION

WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS

STATE HIGHWAY DEPARTMENT
DRAINAGE EASEMENT MAP

PROJECT NO. S381 DRAWN BY SEC CHECKED BY DLA DATE 1-97 SHEET NO. 9



LEGEND

- DRAINAGE BASIN BOUNDARY
- SS: 5-0.0050 (FT/FT) PROPOSED STORM DRAIN
- ANALYSIS POINT
- - - EXISTING CULVERT
- ↑ I-40 INTERCEPTOR
- PROPOSED STORM DRAIN

SUMMARY OF PEAK DISCHARGES
AND PEAK VOLUMES
ALTERNATIVE 2A1
DEVELOPED CONDITIONS
ALL PLUMS INCLUDE A 1.5% EXCESS FACTOR

ANALYSIS POINT	AREA (AC)	PEAK DISCHARGE (MGD)	PEAK VOLUME (MG)
1	1.1	0.01	0.01
2	1.1	0.01	0.01
3	1.1	0.01	0.01
4	1.1	0.01	0.01
5	1.1	0.01	0.01
6	1.1	0.01	0.01
7	1.1	0.01	0.01
8	1.1	0.01	0.01
9	1.1	0.01	0.01
10	1.1	0.01	0.01
11	1.1	0.01	0.01
12	1.1	0.01	0.01
13	1.1	0.01	0.01
14	1.1	0.01	0.01
15	1.1	0.01	0.01
16	1.1	0.01	0.01
17	1.1	0.01	0.01
18	1.1	0.01	0.01
19	1.1	0.01	0.01
20	1.1	0.01	0.01
21	1.1	0.01	0.01
22	1.1	0.01	0.01
23	1.1	0.01	0.01
24	1.1	0.01	0.01
25	1.1	0.01	0.01
26	1.1	0.01	0.01
27	1.1	0.01	0.01
28	1.1	0.01	0.01
29	1.1	0.01	0.01
30	1.1	0.01	0.01
31	1.1	0.01	0.01
32	1.1	0.01	0.01
33	1.1	0.01	0.01
34	1.1	0.01	0.01
35	1.1	0.01	0.01
36	1.1	0.01	0.01
37	1.1	0.01	0.01
38	1.1	0.01	0.01
39	1.1	0.01	0.01
40	1.1	0.01	0.01
41	1.1	0.01	0.01
42	1.1	0.01	0.01
43	1.1	0.01	0.01
44	1.1	0.01	0.01
45	1.1	0.01	0.01
46	1.1	0.01	0.01
47	1.1	0.01	0.01
48	1.1	0.01	0.01
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51	1.1	0.01	0.01
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53	1.1	0.01	0.01
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55	1.1	0.01	0.01
56	1.1	0.01	0.01
57	1.1	0.01	0.01
58	1.1	0.01	0.01
59	1.1	0.01	0.01
60	1.1	0.01	0.01
61	1.1	0.01	0.01
62	1.1	0.01	0.01
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66	1.1	0.01	0.01
67	1.1	0.01	0.01
68	1.1	0.01	0.01
69	1.1	0.01	0.01
70	1.1	0.01	0.01
71	1.1	0.01	0.01
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73	1.1	0.01	0.01
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75	1.1	0.01	0.01
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77	1.1	0.01	0.01
78	1.1	0.01	0.01
79	1.1	0.01	0.01
80	1.1	0.01	0.01
81	1.1	0.01	0.01
82	1.1	0.01	0.01
83	1.1	0.01	0.01
84	1.1	0.01	0.01
85	1.1	0.01	0.01
86	1.1	0.01	0.01
87	1.1	0.01	0.01
88	1.1	0.01	0.01
89	1.1	0.01	0.01
90	1.1	0.01	0.01
91	1.1	0.01	0.01
92	1.1	0.01	0.01
93	1.1	0.01	0.01
94	1.1	0.01	0.01
95	1.1	0.01	0.01
96	1.1	0.01	0.01
97	1.1	0.01	0.01
98	1.1	0.01	0.01
99	1.1	0.01	0.01
100	1.1	0.01	0.01

* TOTAL FLOW INTO CIRCULAR DETENTION POND
FOR LOCATION OF ANALYSIS POINTS NOT SHOWN SEE MAP NO. 3



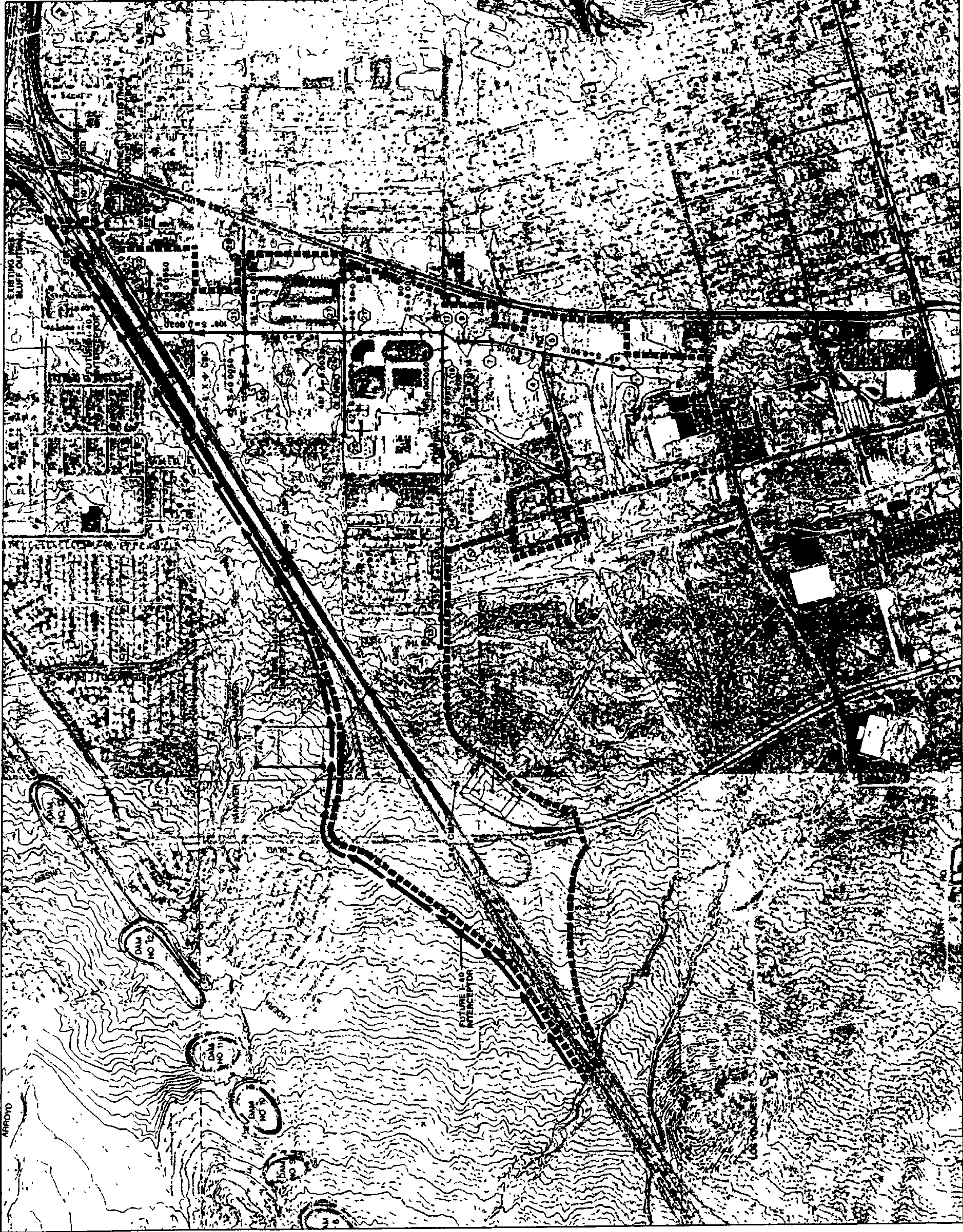
Smith Engineering Company

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
HYDROLOGIC DIVISION

WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS

**ALTERNATIVE 2A1
STORM DRAIN SYSTEM MAP**

PROJECT NO. 5381 DRAWN BY RPH CHECKED BY DLA DATE 1-97 MAP NO. 6



LEGEND

----- DRAINAGE BASIN BOUNDARY
----- PROPOSED STORM DRAIN
S=0.0050 (FT/FT)
O ANALYSIS POINT
Y EXISTING CULVERT
↑ 1-40 INTERCEPTOR
↑ PROPOSED STORM DRAIN

SUMMARY OF PEAK DISCHARGES
AND PEAK VOLUMES
ALTERNATIVE 1C
DEVELOPED CONDITIONS
ALL VALUES INCLUDE A 10% INCREASE FACTOR

ANALYSIS POINT	WATER VOLUME (CU FT)	PEAK DISCHARGE (MGAL)	PEAK VOLUME (MGAL)
1	28	0.7	0.7
2	34	0.7	0.7
3	32	0.7	0.7
4	31	0.7	0.7
5	31	0.7	0.7
6	31	0.7	0.7
7	31	0.7	0.7
8	31	0.7	0.7
9	31	0.7	0.7
10	31	0.7	0.7
11	31	0.7	0.7
12	31	0.7	0.7
13	31	0.7	0.7
14	31	0.7	0.7
15	31	0.7	0.7
16	31	0.7	0.7
17	31	0.7	0.7
18	31	0.7	0.7
19	31	0.7	0.7
20	31	0.7	0.7
21	31	0.7	0.7
22	31	0.7	0.7
23	31	0.7	0.7
24	31	0.7	0.7
25	31	0.7	0.7
26	31	0.7	0.7
27	31	0.7	0.7
28	31	0.7	0.7
29	31	0.7	0.7
30	31	0.7	0.7

FOR LOCATION OF ANALYSIS POINTS NOT SHOWN SEE MAP NO. 3



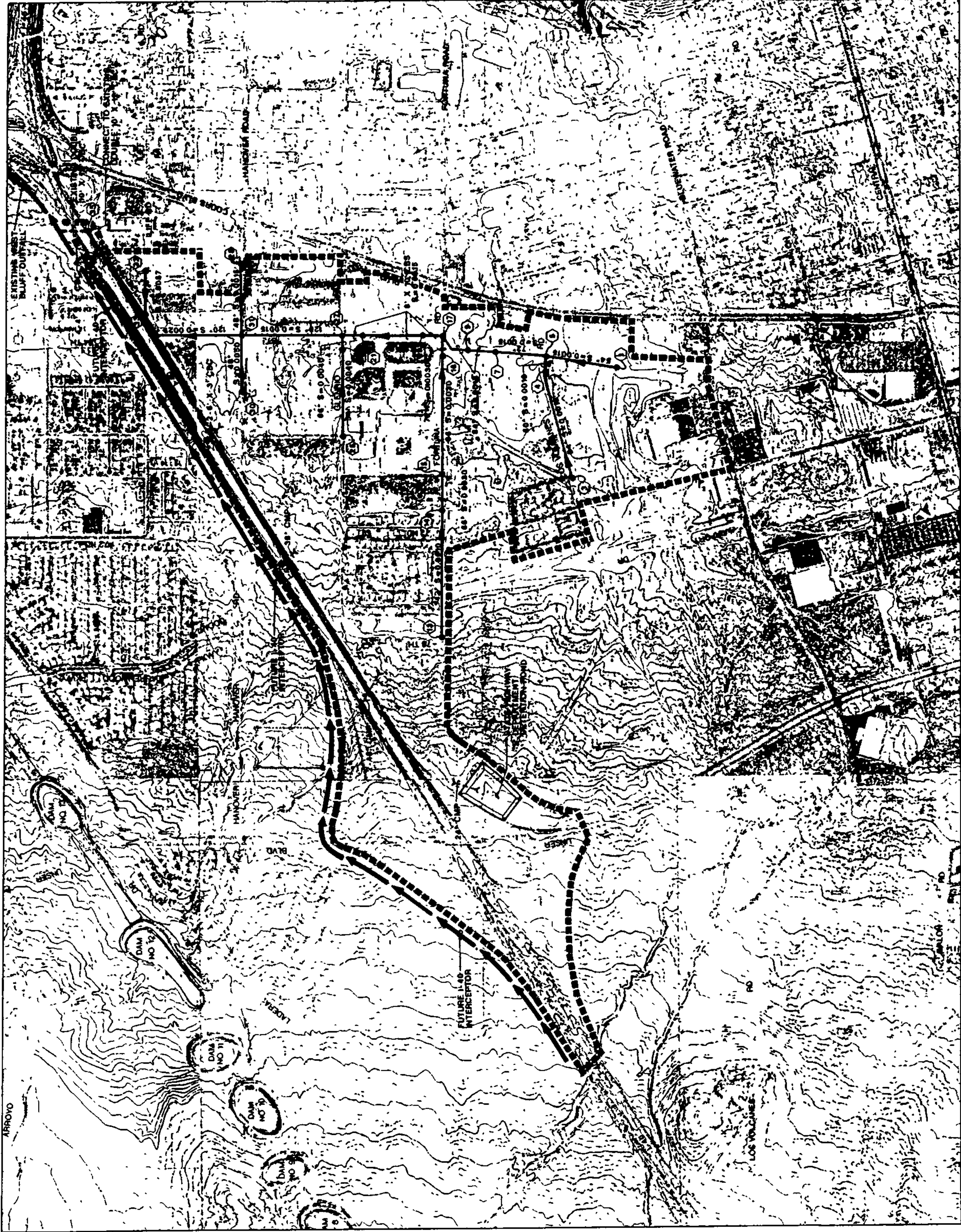
Smith Engineering Company

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
HYDROLOGY DIVISION

WEST MESA DIVISION PROJECT
DRAINAGE ANALYSIS

**ALTERNATIVE 1C
STORM DRAIN SYSTEM MAP**

PROJECT NO. 5381
DRAWN BY RFL
CHECKED BY DLA
DATE 1-97
SHEET NO. 5



LEGEND

----- DRAINAGE BASIN BOUNDARY

--- PROPOSED STORM DRAIN

○ ANALYSIS POINT

--- EXISTING CULVERT

--- 1.40 INTERCEPTOR

--- PROPOSED STORM DRAIN

SUMMARY OF PEAK DISCHARGES
AND PEAK VOLUMES
ALTERNATIVE 1B
DEVELOPED CONDITIONS

ANALYSIS POINT	DISCHARGE (CFS)	PEAK VOLUME (CU FT)	PEAK FLOW (CFS)	PEAK VOLUME (CU FT)
1	1.1	1.1	1.1	1.1
2	1.1	1.1	1.1	1.1
3	1.1	1.1	1.1	1.1
4	1.1	1.1	1.1	1.1
5	1.1	1.1	1.1	1.1
6	1.1	1.1	1.1	1.1
7	1.1	1.1	1.1	1.1
8	1.1	1.1	1.1	1.1
9	1.1	1.1	1.1	1.1
10	1.1	1.1	1.1	1.1
11	1.1	1.1	1.1	1.1
12	1.1	1.1	1.1	1.1
13	1.1	1.1	1.1	1.1
14	1.1	1.1	1.1	1.1
15	1.1	1.1	1.1	1.1
16	1.1	1.1	1.1	1.1
17	1.1	1.1	1.1	1.1
18	1.1	1.1	1.1	1.1
19	1.1	1.1	1.1	1.1
20	1.1	1.1	1.1	1.1
21	1.1	1.1	1.1	1.1
22	1.1	1.1	1.1	1.1
23	1.1	1.1	1.1	1.1
24	1.1	1.1	1.1	1.1
25	1.1	1.1	1.1	1.1
26	1.1	1.1	1.1	1.1
27	1.1	1.1	1.1	1.1
28	1.1	1.1	1.1	1.1
29	1.1	1.1	1.1	1.1
30	1.1	1.1	1.1	1.1
31	1.1	1.1	1.1	1.1
32	1.1	1.1	1.1	1.1
33	1.1	1.1	1.1	1.1
34	1.1	1.1	1.1	1.1
35	1.1	1.1	1.1	1.1
36	1.1	1.1	1.1	1.1
37	1.1	1.1	1.1	1.1
38	1.1	1.1	1.1	1.1
39	1.1	1.1	1.1	1.1
40	1.1	1.1	1.1	1.1
41	1.1	1.1	1.1	1.1
42	1.1	1.1	1.1	1.1
43	1.1	1.1	1.1	1.1
44	1.1	1.1	1.1	1.1
45	1.1	1.1	1.1	1.1
46	1.1	1.1	1.1	1.1
47	1.1	1.1	1.1	1.1
48	1.1	1.1	1.1	1.1
49	1.1	1.1	1.1	1.1
50	1.1	1.1	1.1	1.1
51	1.1	1.1	1.1	1.1
52	1.1	1.1	1.1	1.1
53	1.1	1.1	1.1	1.1
54	1.1	1.1	1.1	1.1
55	1.1	1.1	1.1	1.1
56	1.1	1.1	1.1	1.1
57	1.1	1.1	1.1	1.1
58	1.1	1.1	1.1	1.1
59	1.1	1.1	1.1	1.1
60	1.1	1.1	1.1	1.1
61	1.1	1.1	1.1	1.1
62	1.1	1.1	1.1	1.1
63	1.1	1.1	1.1	1.1
64	1.1	1.1	1.1	1.1
65	1.1	1.1	1.1	1.1
66	1.1	1.1	1.1	1.1
67	1.1	1.1	1.1	1.1
68	1.1	1.1	1.1	1.1
69	1.1	1.1	1.1	1.1
70	1.1	1.1	1.1	1.1
71	1.1	1.1	1.1	1.1
72	1.1	1.1	1.1	1.1
73	1.1	1.1	1.1	1.1
74	1.1	1.1	1.1	1.1
75	1.1	1.1	1.1	1.1
76	1.1	1.1	1.1	1.1
77	1.1	1.1	1.1	1.1
78	1.1	1.1	1.1	1.1
79	1.1	1.1	1.1	1.1
80	1.1	1.1	1.1	1.1
81	1.1	1.1	1.1	1.1
82	1.1	1.1	1.1	1.1
83	1.1	1.1	1.1	1.1
84	1.1	1.1	1.1	1.1
85	1.1	1.1	1.1	1.1
86	1.1	1.1	1.1	1.1
87	1.1	1.1	1.1	1.1
88	1.1	1.1	1.1	1.1
89	1.1	1.1	1.1	1.1
90	1.1	1.1	1.1	1.1
91	1.1	1.1	1.1	1.1
92	1.1	1.1	1.1	1.1
93	1.1	1.1	1.1	1.1
94	1.1	1.1	1.1	1.1
95	1.1	1.1	1.1	1.1
96	1.1	1.1	1.1	1.1
97	1.1	1.1	1.1	1.1
98	1.1	1.1	1.1	1.1
99	1.1	1.1	1.1	1.1
100	1.1	1.1	1.1	1.1

FOR LOCATION OF ANALYSIS POINTS NOT SHOWN SEE MAP NO. 3



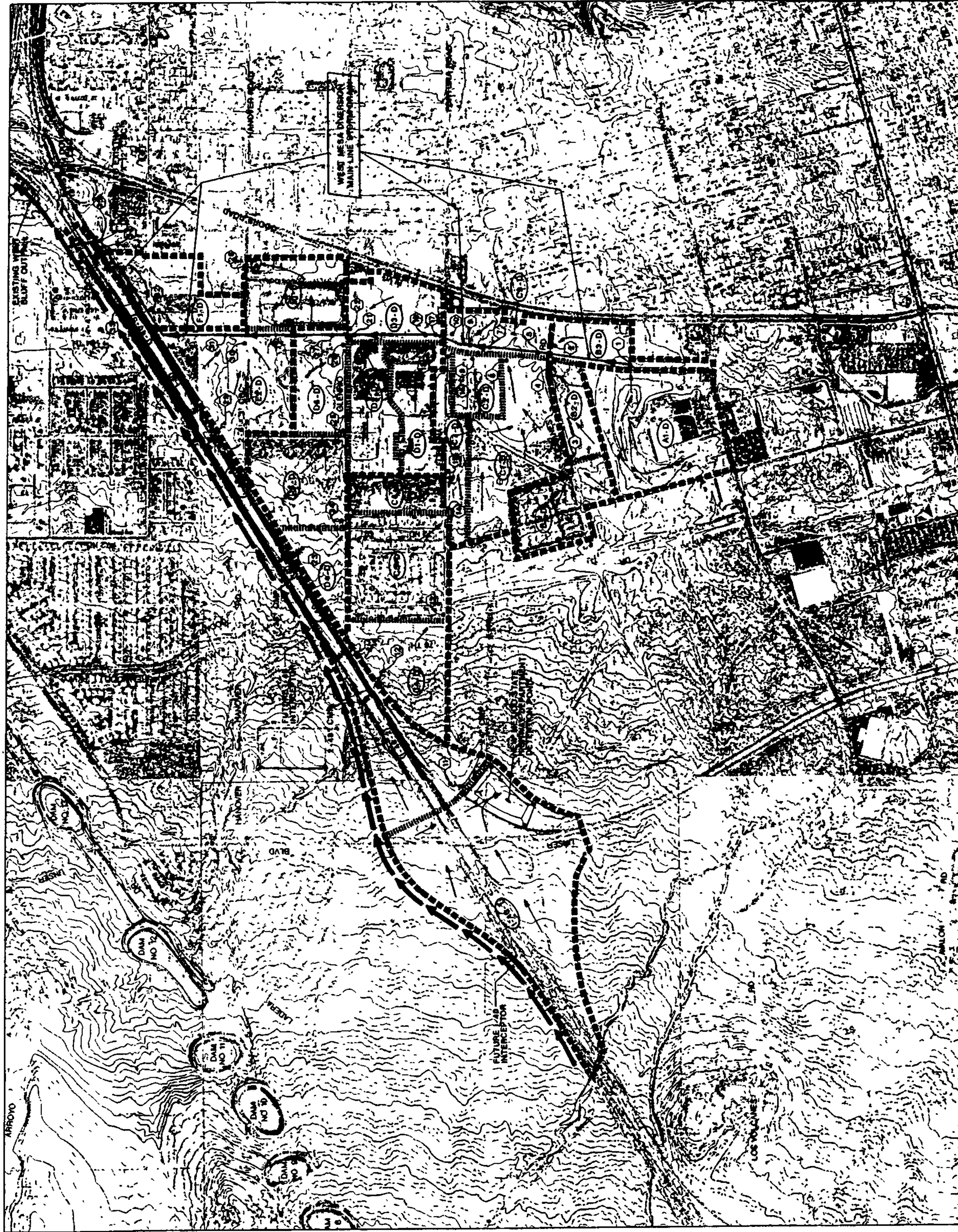
Smith Engineering Company

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
HYDROLOGY DIVISION

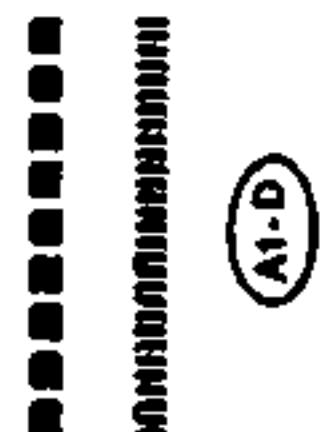
WEST MESA DIVERSION PROJECT
DRAINAGE ANALYSIS

**ALTERNATIVE 1B
STORM DRAIN SYSTEM MAP**

PROJECT NO. 5381 DRAWN BY RFL CHECKED BY DLA DATE 1-97 MAP NO. 4

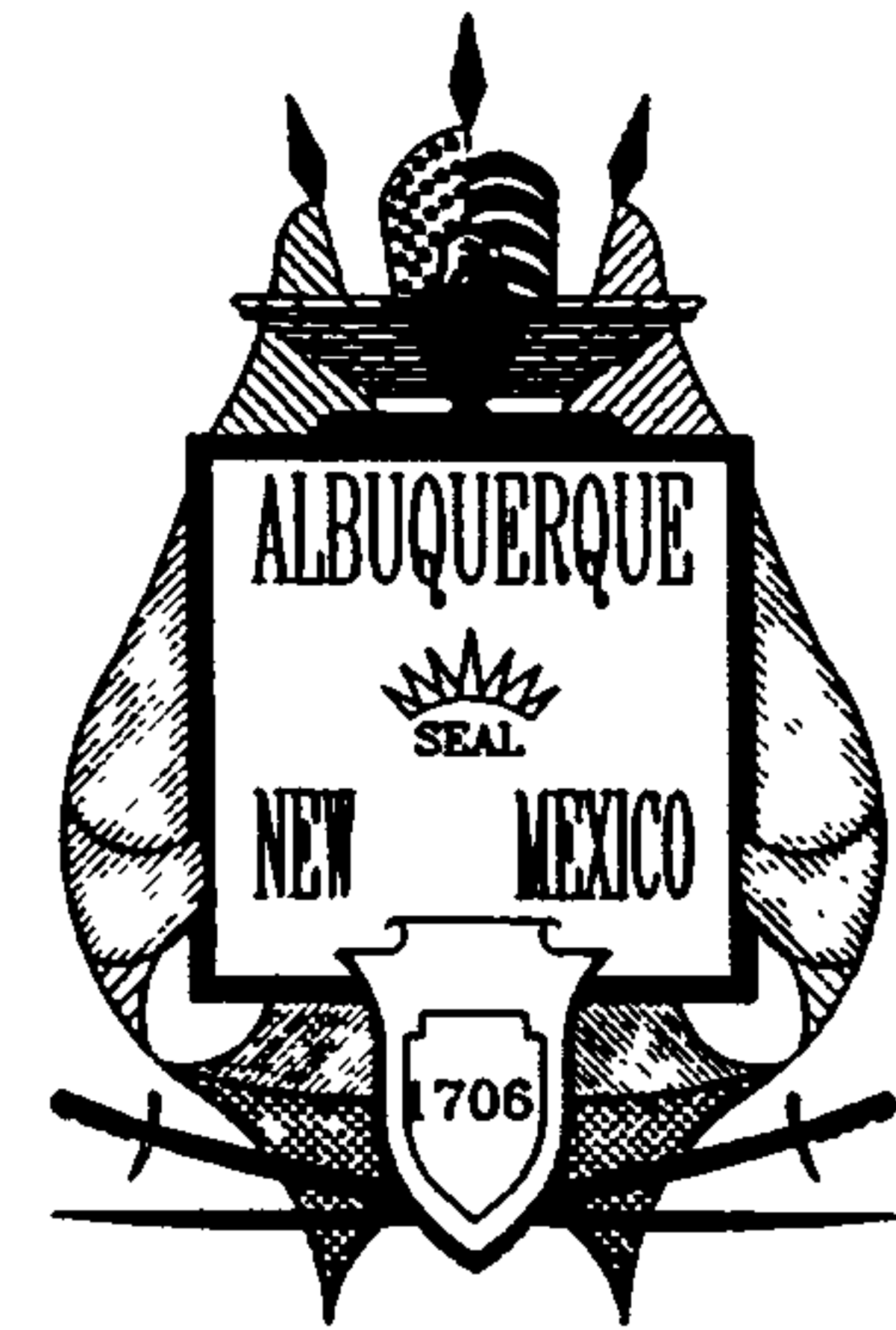


ANALYSIS POINT	CHRY (mm)	WTR (mm)	CHRY (mm)	WTR (mm)
1	50	2.5	24	1.1
2	77	1.8	35	2.2
3	105	1.5	46	3.3
4	133	1.2	57	4.4
5	161	0.9	68	5.5
6	189	0.6	79	6.6
7	217	0.3	90	7.7
8	245	0.0	101	8.8
9	273	0.0	112	9.9
10	301	0.0	123	11.0
11	329	0.0	134	12.1
12	357	0.0	145	13.2
13	385	0.0	156	14.3
14	413	0.0	167	15.4
15	441	0.0	178	16.5
16	469	0.0	189	17.6
17	497	0.0	200	18.7
18	525	0.0	211	19.8
19	553	0.0	222	20.9
20	581	0.0	233	22.0
21	609	0.0	244	23.1
22	637	0.0	255	24.2
23	665	0.0	266	25.3
24	693	0.0	277	26.4
25	721	0.0	288	27.5
26	749	0.0	299	28.6
27	777	0.0	310	29.7
28	805	0.0	321	30.8
29	833	0.0	332	31.9
30	861	0.0	343	33.0
31	889	0.0	354	34.1
32	917	0.0	365	35.2
33	945	0.0	376	36.3
34	973	0.0	387	37.4
35	1001	0.0	398	38.5
36	1029	0.0	409	39.6
37	1057	0.0	420	40.7
38	1085	0.0	431	41.8
39	1113	0.0	442	42.9
40	1141	0.0	453	44.0
41	1169	0.0	464	45.1
42	1197	0.0	475	46.2
43	1225	0.0	486	47.3
44	1253	0.0	497	48.4
45	1281	0.0	508	49.5
46	1309	0.0	519	50.6
47	1337	0.0	530	51.7
48	1365	0.0	541	52.8
49	1393	0.0	552	53.9
50	1421	0.0	563	55.0
51	1449	0.0	574	56.1
52	1477	0.0	585	57.2
53	1505	0.0	596	58.3
54	1533	0.0	607	59.4
55	1561	0.0	618	60.5
56	1589	0.0	629	61.6
57	1617	0.0	640	62.7
58	1645	0.0	651	63.8
59	1673	0.0	662	64.9
60	1701	0.0	673	66.0
61	1729	0.0	684	67.1
62	1757	0.0	695	68.2
63	1785	0.0	706	69.3
64	1813	0.0	717	70.4
65	1841	0.0	728	71.5
66	1869	0.0	739	72.6
67	1897	0.0	750	73.7
68	1925	0.0	761	74.8
69	1953	0.0	772	75.9
70	1981	0.0	783	77.0
71	2009	0.0	794	78.1
72	2037	0.0	805	79.2
73	2065	0.0	816	80.3
74	2093	0.0	827	81.4
75	2121	0.0	838	82.5
76	2149	0.0	849	83.6
77	2177	0.0	860	84.7
78	2205	0.0	871	85.8
79	2233	0.0	882	86.9
80	2261	0.0	893	88.0
81	2289	0.0	904	89.1
82	2317	0.0	915	90.2
83	2345	0.0	926	91.3
84	2373	0.0	937	92.4
85	2401	0.0	948	93.5
86	2429	0.0	959	94.6
87	2457	0.0	970	95.7
88	2485	0.0	981	96.8
89	2513	0.0	992	97.9

	LEGEND DRAINAGE BASIN BOUNDARY SUB-BASIN BOUNDARY DRAINAGE BASIN DESIGNATION DRAINAGE ANALYSIS POINT DIRECTION OF SURFACE FLOW CULVERT PIPE 1-40 INTERCEPTOR PROPOSED STORM DRAIN
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ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 08-22-2011 BY 60322
UCBAW/BJA

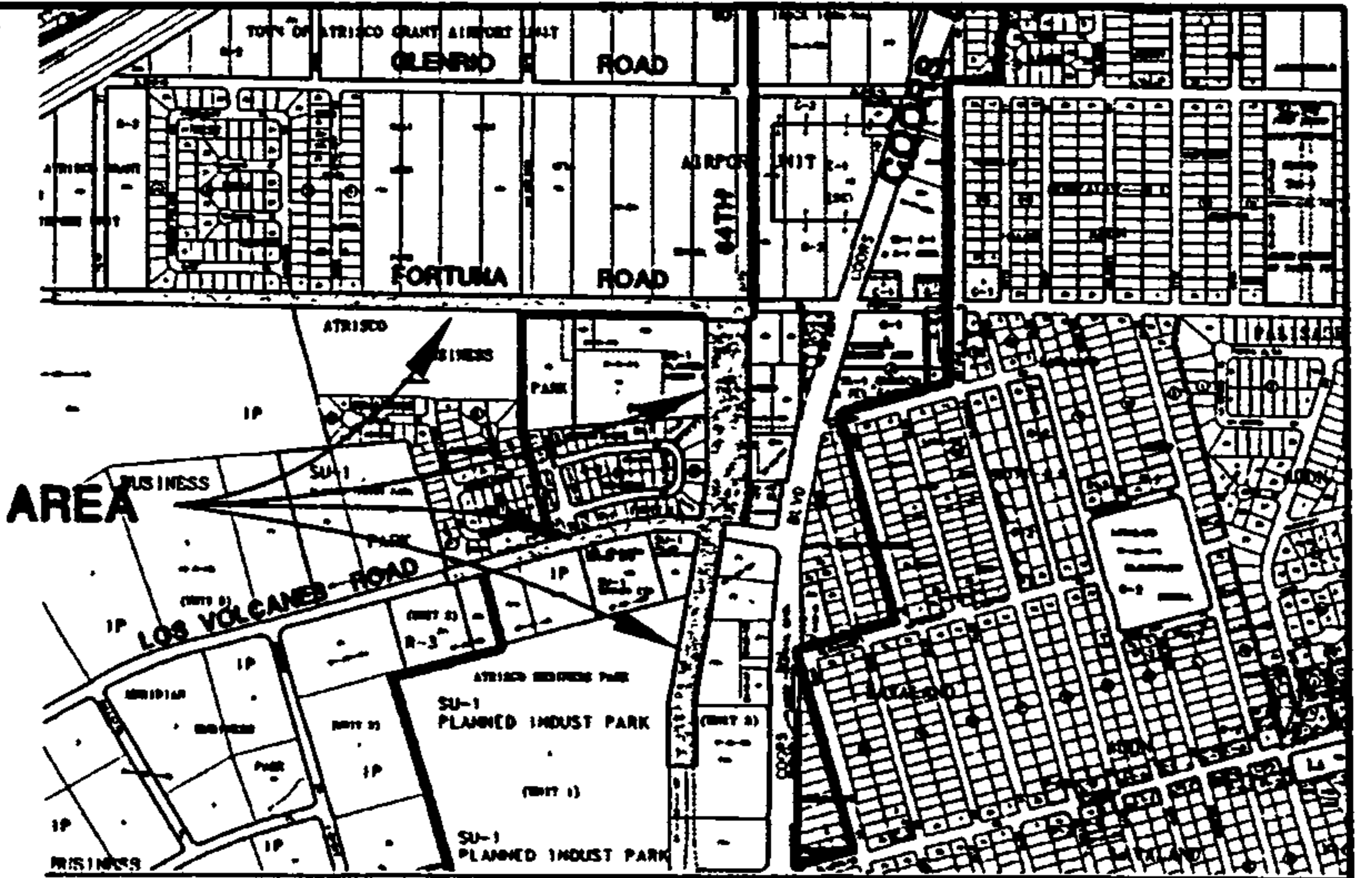
PROJECT NO.	5387	DRAWN BY	RPH	CHECKED BY	DATE	MAP NO.	3
DEVELOPED CONDITIONS DRAINAGE AREA MAP WEST META DIVERSION PROJECT DRAINAGE ANALYSIS							
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT HYDROLOGIST DIVISION							
Smith Engineering Company							



RECORD DRAWINGS

I, Douglas L. Andrews of the firm of Smith Engineering Company, A Registered Professional Engineer in the State of New Mexico, do hereby state, to the best of my knowledge and belief, that the infrastructure installed as part of this project has been inspected by a qualified person under my direct supervision and has been constructed in general accordance with the plans and specifications, while someone from Smith Engineering Company was onsite, approved by the City Engineer and that the original design intent of the approved plans has been met, except as noted on the as-built construction drawings. The Certification is based on site inspections by me or personnel under my direction, and as-built survey information provided by RICK FENCEL (Surveyor Name) NMPS number 10262 (PS#).

VICINITY
MAP

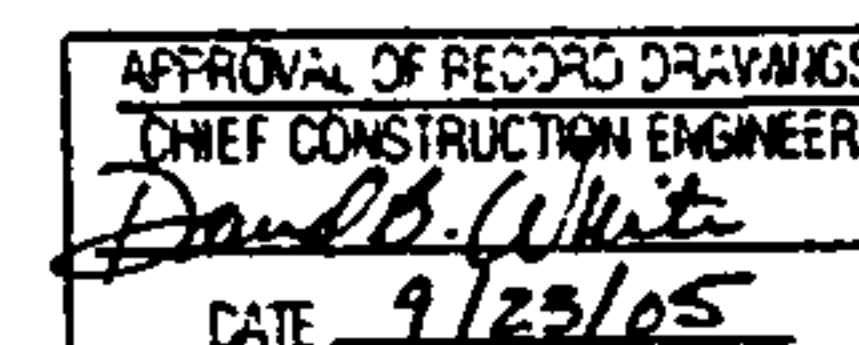


PROJECT AREA



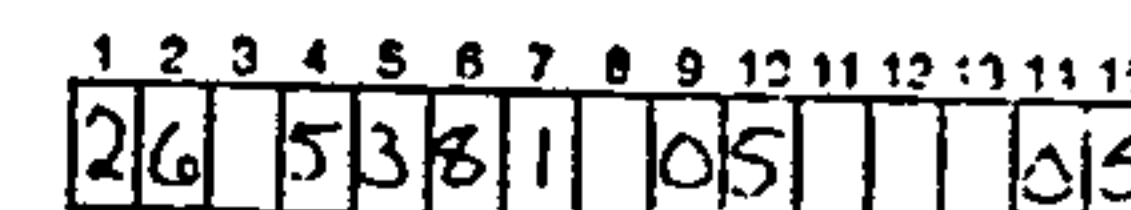
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT PLANS FOR CONSTRUCTION

WEST MESA DIVERSION PROJECT PHASE 2D



NOTES:

- CONTRACTOR SHALL WORK CONTINUOUSLY, 24-HOURS PER DAY, ON ALL ARTERIAL ROADWAYS WHEN TRAFFIC LANES ARE CLOSED TO TRAFFIC UNLESS THE WORK VIOLATES THE CITY'S NOISE ORDINANCE.
- IF THE CONTRACTOR IS NOT ALLOWED TO WORK AT NIGHT DUE TO NOISE ORDINANCE VIOLATIONS, THE CONTRACTOR SHALL OPEN ALL TRAFFIC LANES TO TRAFFIC WITH THE PROPER USE OF TRENCH PLATES DURING NON-WORKING HOURS, AND MUST WORK MINIMUM HOURS FROM 7:00 A.M. TO 10:00 P.M. MONDAY THROUGH SATURDAYS.
- ARTERIAL STREETS ARE AS INDICATED IN THE "LONG RANGE ROADWAY SYSTEM" MAP PUBLISHED BY THE MID-REGION COUNCIL OF GOVERNMENTS (MRCOG).



UTILITY COMPANY CONTACTS

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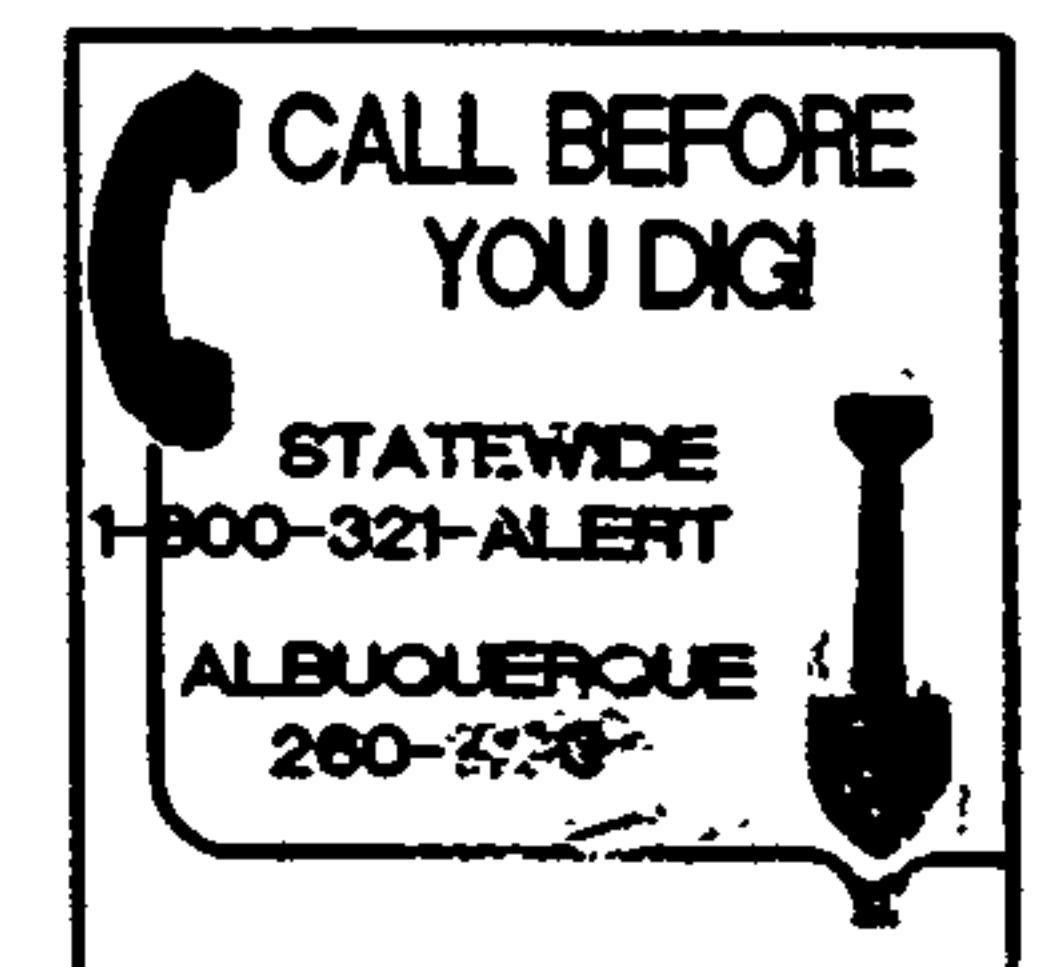
**CITY OF ALBUQUERQUE
(WATER & SEWER)**
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McLeod USA
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QUEST LONG DISTANCE
LARRY KELLY
Senior Operations Tech
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(505) 246-0501

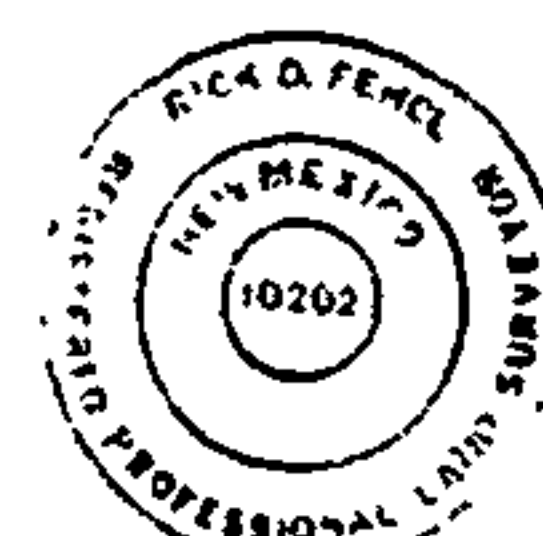
UNIVERSAL ACCESS, INC.
BRYAN PRICE
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EXPEDIS MANAGEMENT CO.
STEVE BENJAMIN
Operations Support Manager
505 Marquette NW Suite 1605
Albuquerque, New Mexico 87102
(505) 998-2220



REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE
1	10	ASB	7/26/04	ASB	7/26/04		
ENGINEERS STAMP & SIGNATURE		APPROVED		ENGINEER		DATE	
		DNC Chairman			8-6-04	APPROVED FOR CONSTRUCTION	DATE
		Transportation			7/26/04		
		Water/Wastewater			7-28-04		
		Hydrology			7-27-04		
		CIP					
Contr. Mgmt.							
Contr. Coord.					8-6-04		
PROJECT NUMBER				538105		SHEET 1 OF 50	

SCANNED BY
MESA REPRO



Surveyor's Certification

I, RICK FENCEL, a duly qualified Registered Professional Land Surveyor under the laws of the State of New Mexico, do hereby certify that the "as-built" information shown on these drawings was obtained from the construction survey performed by me or under my supervision, and that the "as-built" information is true and correct to the best of my knowledge and belief. I am not responsible for any errors or omissions on the record drawings.

Rick Fencel 7/06/05
10262
Professional Engineer

SCANNED BY
MESA REPRO

1961050
Smith Engineering Company
 A Full Service Engineering Company
 6000 Sparta Boulevard, S.E. Atlanta 24, Georgia, Box 10100 40405
 Registered Professional Engineers—Mechanical

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D

Design Review Committee	City Engineer Approval
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City Project No.	538105	Zone Map No.	J-10	Sheet	2	Of	50
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GENERAL NOTES:

- 1 FIVE (5) WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR WILL SUBMIT A DETAILED CONSTRUCTION SCHEDULE TO THE CITY CONSTRUCTION COORDINATION DIVISION. TWO (2) DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR WILL OBTAIN A BARRICADING PERMIT FROM THE CONSTRUCTION COORDINATION DIVISION. CONTRACTOR SHALL NOTIFY BARRICADE ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION. REFER TO SECTION 19 OF SPECIFICATIONS.
- 2 THE CONTRACTOR WILL NOTIFY THE FIELD ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK, IN ORDER THAT THE FIELD ENGINEER MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. THE CONTRACTOR WILL NOTIFY THE ENGINEER IF A MONUMENT IS DISTURBED. REPLACEMENT WILL BE DONE ONLY BY THE CITY OF ALBUQUERQUE SURVEY SECTION. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATION OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR WILL, AT HIS OWN EXPENSE, HAVE THE CITY SURVEY SECTION ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO SECTION 4 OF SPECIFICATIONS.
- 3 THE SPECIFICATIONS USED FOR THIS PROJECT ARE THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1996 EDITION INCLUDING ALL UPDATES THROUGH UPDATE NO. 7.
- 4 ALL NEW MANHOLES SHALL BE TYPE "E" (COA DWG. 2102) UNLESS OTHERWISE NOTED ON THE PLANS.
- 5 THE CONTRACTOR WILL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS, INCLUDING, BUT NOT LIMITED TO HAZARDOUS WASTE AT DISPOSAL SITES APPROVED BY GOVERNMENTAL AGENCIES REGULATING THE DISPOSAL OF SUCH MATERIALS.
- 6 ALL EXISTING WATER VALVE BOXES AND MANHOLES IN THE STREET CONSTRUCTION ARE TO BE ADJUSTED TO FINISH GRADE AND WILL BE MEASURED AND PAID PER EACH.
- 7 SUBGRADE PREPARATION UNDER SIDEWALKS AND DRIVE PADS, AND SUBGRADE AND SUBBASE PREPARATION UNDER CURB AND GUTTER IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF SUCH, AND NO DIRECT PAYMENT SHALL BE MADE FOR THOSE ITEMS OF WORK.
- 8 ALL EXCAVATION WILL BE GOVERNED BY FEDERAL, STATE AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
- 9 ALL SIGNS AND CODING WILL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" CURRENT EDITION PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION.
- 10 THE CONTRACTOR IS TO EXERCISE CARE TO AVOID DISTURBING ANY EXISTING UNDERGROUND UTILITIES. IT WILL BE HIS RESPONSIBILITY TO COORDINATE WITH THE UTILITY COMPANIES IN ORDER TO PREVENT ANY SERVICE DISRUPTION. SEE SECTION 18 "UTILITIES", CITY OF ALBUQUERQUE, STANDARD SPECIFICATIONS FOR CONTRACTOR REQUIREMENTS.
- 11 WHEN ABUTTING NEW PAVEMENT TO EXISTING PAVEMENT, SAW CUT EXISTING PAVEMENT TO A STRAIGHT LINE AND AT RIGHT ANGLES AND REMOVE ANY BROKEN OR CRACKED PAVEMENT. NO DIRECT PAYMENT WILL BE MADE FOR SAW CUTTING.
- 12 ALL GAS VALVES, GAS MANHOLES, ELECTRICAL MANHOLES, TELEPHONE MANHOLES, AND UTILITY POLES WILL BE ADJUSTED TO GRADE BY EACH UTILITY COMPANY. CONTRACTOR WILL COORDINATE THROUGH CITY UTILITY COORDINATOR.
- 13 WHEN REMOVAL OF EXISTING CURB AND GUTTER OR SIDEWALK IS REQUIRED, REMOVE BACK TO NEAREST SUITABLE JOINT UNLESS OTHERWISE DIRECTED BY THE CITY FIELD ENGINEER.
- 14 THE CONTRACTOR WILL NOTIFY THE UTILITY COMPANIES BY CALLING NEW MEXICO ONE CALL SYSTEM 260-1990 TWO (2) WORKING DAYS PRIOR TO COMMENCING WORK IN NEW AREAS.
- 15 CONTRACTOR WILL PLACE BITUMINOUS MATERIAL WITH THE USE OF A LAYDOWN MACHINE WHERE PAVEMENT IS 7 FEET IN WIDTH OR WIDER.
- 16 CONTRACTOR WILL NOT PAVE OVER ANY SURFACE FEATURE, I.E., GAS VALVE, MANHOLE COVER, ETC. WITHOUT PRIOR APPROVAL FROM THE CITY FIELD ENGINEER.
- 17 CONTRACTOR WILL CONFINE HIS WORK WITHIN THE CONSTRUCTION EASEMENT LIMITS AND/OR RIGHT-OF-WAY, OR PROVIDE COPIES OF AGREEMENTS WITH ADJACENT LANDOWNERS TO THE CITY OF ALBUQUERQUE.
- 18 MINIMUM BOTTOM WIDTH OF TRENCHES FOR RIGID PIPE SHALL BE EQUAL TO THE OUTSIDE DIAMETER PLUS 16 INCHES. BEDDING MATERIAL SHALL BE CLASS II, III, OR IV UNLESS OTHERWISE SPECIFICALLY NOTED ON THE PLANS.
- 19 MINIMUM BOTTOM WIDTH OF TRENCHES FOR NON-RIGID PIPE SHALL BE EQUAL TO THE OUTSIDE DIAMETER PLUS 12 INCHES. BEDDING MATERIAL SHALL BE CLASS I, II, OR III.
- 20 THE CONTRACTOR AGREES TO TAKE NECESSARY SAFETY PRECAUTIONS AS REQUIRED BY FEDERAL, STATE AND LOCAL AUTHORITIES TO PROTECT PEDESTRIAN AND VEHICULAR TRAFFIC IN THE CONSTRUCTION AREA, WHICH INCLUDE BUT ARE NOT LIMITED TO MAINTAINING ADEQUATE WARNING SIGNS, BARRICADES, LIGHTS, GUARD FENCES, WALKS AND BRIDGES.
- 21 THE CONTRACTOR SHALL CONSTRUCT CITY OF ALBUQUERQUE STANDARD WHEELCHAIR RAMPS THAT CONFORM TO CURRENT ADA REQUIREMENTS.
- 22 PRIOR TO CONSTRUCTION, THE CONTRACTOR WILL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL CONFLICTING UTILITIES. SHOULD A CONFLICT EXIST BETWEEN THE FIELD INFORMATION AND THE PLANS, THE CONTRACTOR WILL NOTIFY THE CITY FIELD ENGINEER SO THE CONFLICT CAN BE RESOLVED WITH MINIMUM AMOUNT OF DELAY.

- 23 THE REPLACEMENT OF THE EXISTING UTILITIES AND THE INSTALLATION OF NEW UTILITY LINES WILL BE COMPLETED IN ADVANCE OF STARTING THE PAVEMENT WORK. TEMPORARY PAVEMENT WILL BE PLACED IN ALL TRENCHES REQUIRED FOR THE UTILITY REPLACEMENTS IN THOSE AREAS THAT MUST MAINTAIN TRAFFIC UNTIL THE FINAL PAVEMENT WORK STARTS IN EACH AREA. TEMPORARY STRIPING SHALL BE THE CONTRACTOR'S RESPONSIBILITY. MAINTENANCE OF THE TEMPORARY PAVING AND STRIPING WILL BE AT THE CONTRACTOR'S EXPENSE.
- 24 TACK COAT FOR SURFACE COURSE REQUIREMENTS WILL BE DETERMINED BY THE CITY FIELD ENGINEER.
- 25 BACKFILL COMPACTION SHALL BE ACCORDING TO SPECIFIED STREET USE.
- 26 ALL NEW STREET PAVING, DRIVEWAYS, SIDEWALKS, AND CURB AND GUTTERS, ABUTTING EXISTING AREAS SHALL MATCH THE ELEVATION OF THOSE AREAS.
- 27 PERMANENT PAVEMENT STRIPING AND MARKINGS WILL BE PLACED BY THE CONTRACTOR. ROAD SHALL NOT BE OPENED TO TRAFFIC UNTIL IT IS STRIPED. ALL STRIPING, PAVEMENT MARKINGS INCLUDING CROSSWALKS, ARROWS AND LINE MARKINGS ARE TO BE CONSTRUCTED OF HOT PLASTIC OR COLD PLASTIC IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 28 ALL EXCAVATED MATERIAL THAT IS NOT REQUIRED TO BE REUSED MUST BE REMOVED FROM THE PROJECT AREA WITHIN FOUR DAYS OF EXCAVATION. SPOIL PILES WILL BE ALLOWED ONLY AS DIRECTED BY THE CITY FIELD ENGINEER.
- 29 THE CONTRACTOR WILL COORDINATE THE CONSTRUCTION ACTIVITIES WITH ALL OTHER CONTRACTORS AND UTILITY COMPANIES WORKING IN THE SAME AREA. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE THEIR ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCE CAUSED BY UTILITY COMPANY WORK CREWS. A CONTRACT EXTENSION MAY BE ALLOWED AS DELINEATED IN CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS.
- 30 EXISTING MEDIAN CURB AND GUTTER AND STANDARD CURB AND GUTTER, NOT DISTURBED BY CONTRACTOR, BUT OUT OF ALIGNMENT, DISPLACED VERTICALLY, BADLY BROKEN AND/OR DETERIORATED, WILL BE REPLACED AS DIRECTED BY THE CITY FIELD ENGINEER AND PAID FOR AT CONTRACT UNIT PRICES.
- 31 ALL TRAFFIC CONTROL DEVICES REQUIRED FOR DRIVEWAY CLOSURES, UTILITY CONSTRUCTION OR FOR OTHER REASONS AND NOT SHOWN ON THE SIGNING PLANS WILL BE FURNISHED BY THE CONTRACTOR AND WILL BE PAID AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS AND BID PROPOSAL. PRIOR TO PLACING THE TRAFFIC CONTROL DEVICES, THE CONTRACTOR WILL NOTIFY THE AFFECTED OWNERS IN ACCORDANCE WITH THE SPECIFICATIONS. CONTRACTOR MUST MAKE PROVISIONS TO PROVIDE ACCESS TO PROPERTIES. REFER TO SECTION 19 OF THE SPECIFICATIONS.
- 32 ALL UTILITY LINES WHICH ARE NOT SPECIFICALLY DESIGNATED TO BE REMOVED AND REPLACED ON THE PLANS, WILL BE MAINTAINED IN SERVICE. SHORING, SHEETING AND OTHER MEANS OF SUPPORT SHALL BE EMPLOYED BY THE CONTRACTOR TO PREVENT DAMAGE OR LOSS OF THESE EXISTING UTILITIES. BEAM AND CABLE OR OTHER ADEQUATE SUPPORTS WILL BE USED FOR TEMPORARY SUPPORT OF ALL UTILITY LINES WHICH CROSS THE TRENCH. ANY DAMAGE TO EXISTING UTILITIES WILL PROMPTLY BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR WILL NOTIFY THE ENGINEER IMMEDIATELY OF ANY SIGNIFICANT DEVIATION OF EXPOSED UTILITIES FROM THE LOCATIONS SHOWN ON THE PLANS SO THAT CONFLICTS CAN BE RESOLVED IN A TIMELY MANNER.
- 33 THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ANY DAMAGE TO EXISTING COA INFRASTRUCTURE (C & G, PAVING, ETC.) DURING CONSTRUCTION, APART FROM THOSE SECTIONS INDICATED FOR REMOVAL ON THE PLANS, AND WILL REPAIR OR REPLACE SAME AT HIS OWN EXPENSE. HE WILL SUITABLY PROTECT THE CURB AND GUTTER FROM INCIDENTAL SPLASHING DURING THE TACK COAT APPLICATION AND WILL BE RESPONSIBLE FOR CLEANING SAME AT HIS OWN COST SHOULD SPLASHING OCCUR.
- 34 ALL INTERFERING PORTIONS OF ABANDONED UTILITY LINES WHICH ARE EXPOSED AS A RESULT OF CONSTRUCTION WILL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
- 35 SHORING COSTS WILL BE CONSIDERED INCIDENTAL TO THE TRENCH AND BACKFILL COSTS.
- 36 THE CONTRACTOR WILL BE RESPONSIBLE FOR SECURING NPDES PERMITS REQUIRED BY APPLICABLE CITY, STATE, AND FEDERAL REGULATIONS.
- 37 THE TERM REMOVE USED IN THIS PLAN SET INCLUDES THE DISPOSAL OF SAID MATERIAL IN ACCORDANCE WITH CITY OF ALBUQUERQUE SPECIFICATIONS, LATEST EDITION.
- 38 ALL ASPHALTIC CONCRETE SHALL BE MINIMUM 1800 LB. STABILITY AND COMPACTED TO 95% MODIFIED MARSHALL DENSITY UNLESS OTHERWISE NOTED ON THE PLANS.
- 39 ALL STRUCTURAL CONCRETE TO BE 4000 PSI UNLESS OTHERWISE NOTED ON PLANS.
- 40 ALL REINFORCING STEEL TO BE GRADE 60 UNLESS OTHERWISE NOTED ON PLANS.
- 41 STATIONS OF STORM DRAIN INLETS ARE TO THE CENTER OF GRATE. ALL STORM DRAIN INLETS WILL BE TYPE "A" UNLESS OTHERWISE NOTED ON THE PLANS.
- 42 ALL STORM DRAIN AND CONNECTOR PIPE WILL BE CLASS IV REINFORCED CONCRETE PIPE UNLESS OTHERWISE NOTED ON THE PLANS.
- 43 EXCESS EXCAVATION REQUIRED TO CONSTRUCT THE PROJECT THAT DOES NOT HAVE A CORRESPONDING BID ITEM (i.e. EXCAVATION OF SUBGRADE OR DIRT) SHALL BE REMOVED AND DISPOSED OF AT NO ADDITIONAL COST TO THE OWNER AND WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

- 44 EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650, SUBPART P.
- 45 CONTRACTOR IS ADVISED TO VISIT THE PROJECT SITE PRIOR TO BIDDING AND FAMILIARIZE THEMSELVES WITH FIELD CONDITIONS INCLUDING THE LOCATION OF UTILITIES SHOWN ON THE PLANS AND OTHER UTILITIES/ OBSTACLES CLEARLY VISIBLE IN THE FIELD.
- 46 FOR STORM DRAIN CONSTRUCTION, RCP PIPE JOINTS SHALL NOT BE GROUTED PRIOR TO FINAL INSPECTION. FINAL INSPECTION WILL DETERMINE JOINTS TO BE GROUTED FOR FINAL ACCEPTANCE OF THE CONSTRUCTION.
- 47 ALL DISTURBED GROUND AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SECTION 1012 NATIVE GRASS SEEDING, AS CURRENTLY UPDATED.
- 48 REMOVAL AND DISPOSAL OF EXISTING ASBESTOS PIPE MATERIAL SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL GOVERNMENTAL LAWS AND REGULATIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR DISPOSING OF ALL ASBESTOS PIPE MATERIAL AT DISPOSAL SITES APPROVED BY GOVERNMENTAL AGENCIES REGULATING THE DISPOSAL OF SUCH MATERIAL.
- 49 ALL EXISTING STRIPING REMOVED AS PART OF THE PAVEMENT REMOVAL PROCESS SHALL BE REPLACED. NO SEPARATE PAYMENT PAYMENT WILL BE MADE FOR THE RE-STRIPING. THE RE-STRIPING WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

LEGEND:

- EXISTING CHAIN LINK FENCE
- EXISTING OVERHEAD ELECTRIC
- EXISTING 2" HP GAS
- EXISTING 48" SAS
- EXISTING SAS
- EXISTING WATER
- EXISTING STORMDRAIN
- EXISTING BLOCK WALL
- EXISTING WATER VALVE
- EXISTING CATCH BASIN
- EXISTING WATER METER
- EXISTING MANHOLE
- NEW MANHOLE
- NEW JUNCTION BOX
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- NEW ASPHALT PAVEMENT
- EXISTING TRAFFIC LIGHT
- EXISTING ASPHALT PAVEMENT
- CITY OF ALBUQUERQUE
- EXISTING SPOT ELEVATION
- EXISTING CONTOUR LINE
- EXISTING TREE
- NEW STORM DRAIN
- CENTERLINE
- TOP OF ASPHALT ELEVATION
- EXISTING BUILDING
- EXISTING CURB AND GUTTER
- SURVEY CONTROL POINT
- EXISTING SIGN
- ROW
- EXISTING EASEMENT LINE
- PROPERTY LINES
- PROPOSED EASEMENT LINE
- PROPOSED CONTOURS
- PROPOSED WATERLINE
- PROPOSED WATERLINE VALVE
- PROPOSED WATERLINE BEND
- PROPOSED FIRE HYDRANT



1961050
Smith Engineering Company
A Full Service Engineering Company
4000 Central Avenue, N.E. Suite 200, Albuquerque, New Mexico 87106

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D

GENERAL NOTES AND LEGEND

Design Review Committee	City Engineer Approval	NO. / REV. / DATE	NO. / REV. / DATE
City Project No.	Zone Map No.	Sheet	Of
538105	J-10	3	50

SCANNED BY
MESA REPRO

SCANNED BY
MESA REPRO

LOCAL SURVEY CONTROL INFORMATION

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION	90' DRAINAGE EASEMENT CL STATION AND OFFSET	FORTUNA RD. CONSTRUCTION CL STATION AND OFFSET	LOS VOLCANES RD. CONSTRUCTION CL STATION AND OFFSET
CP-2	1493542.47	362274.43	5107.02	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A
CP-3	1492986.46	362175.55	5102.62	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A
CP-4	1492546.11	362303.73	5100.55	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A
CP-5	1491435.57	362333.26	5099.28	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A
CP-6	1491503.45	361341.88	5100.74	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A
CP-7	1490400.35	362339.69	5097.07	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A
CP-8	1490406.85	361469.26	5099.94	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	18+25.84, 19.41' RT	N/A
CP-9	1490415.06	360395.60	5104.49	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599" DRIVEN FLUSH WITH ASPHALT	N/A	28+99.51, 15.09' RT	N/A
CP-10	1490369.36	359583.65	5114.33	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	10+37.43, 2575.34' RT	37+10.88, 40.08' LT	31+68.07, 1637.55' RT
CP-11	1489886.91	362092.36	5098.01	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	15+13.17, 81.43' RT	11+96.48, 533.23' LT	11+01.75, 619.70' RT
CP-12	1489270.51	362111.89	5102.22	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	21+13.26, 7.86' RT	N/A	10+06.22, 31.75' RT
CP-13	1489198.48	361416.87	5099.90	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599" IN ASPHALT	23+19.27, 675.69' RT	N/A	17+00.57, 31.91' RT
CP-14	1489090.96	360982.73	5103.62	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	25+09.26, 1080.58' RT	N/A	21+47.75, 40.47' RT
CP-15	1488613.33	362022.44	5101.65	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	27+75.32, 32.22' LT	N/A	10+03.19, 631.49' LT
CP-16	1487926.70	361945.09	5102.58	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	34+73.01, 8.58' LT	N/A	15+19.68, 1333.27' LT
CP-17	1492588.88	362800.08	5095.50	NO. 5 REBAR & PLASTIC CAP "CONTROL PT. NMPS 11599"	N/A	N/A	N/A

Fortuna Rd. Construction CL
Survey Control Information

Station	Northing	Easting
10+00.00	1490377.81	362284.81
20+00.00	1490389.48	361294.88
45+86.55	1490419.65	358708.50

90' Drainage Easement Construction CL
Survey Control Information

Station	Northing	Easting
10+00.00	1490379.39	362159.24
15+69.14	1489810.29	362153.19
19+59.91	1489420.53	362149.02
21+44.64	1489238.21	362113.62
30+29.06	1488370.72	361941.43
30+69.59	1488330.19	361940.90
39+50.11	1487449.72	361931.32

Los Volcanes Rd. Construction CL
Survey Control Information

Station	Northing	Easting
10+00.00	1489238.21	362113.62
10+91.25	1489250.93	362023.26
14+66.90	1489228.17	361650.83
33+85.71	1488731.30	359797.46

Cedar Ridge Estates Subdivision
Storm Drain Construction Centerline
Survey Control Information

Station	Northing	Easting
10+00.00	1489837.79	362143.48
10+52.69	1489818.83	362094.32
10+78.44	1489802.07	362074.77

AS BUILT INFORMATION

CONTRACTOR: *Smith Engineering*

STATIONED BY: *Smith Engineering*

DATE: *1/13/05*

REVISIONS

DESIGN

DATE: 06/04

DATE: 06/04

CHECKED BY: DLA

BENCH MARKS

1-40+18 NM5HC/ACS ELEV. 5103.98 FEET (SLD 1929)

STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN

ALBUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD

448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A

STANDARD NM5HC BRASS TABLET, STAMPED

WITH THE GROUND. (N 1494859.08, E 364150.93)

SURVEY INFORMATION

FIELD NOTES

NO.

BY

DATE

ENGINEER'S SEAL

1-13-05

17771

1/13/05

DESIGNED BY: DLA

DRAWN BY: DLA

DATE: 06/04

DATE: 06/04

CHECKED BY: DLA

DATE: 06/04

1961050

Smith Engineering Company

A Public Service Engineering Company

1000 North Central Ave., Suite 1000, Albuquerque, NM 87102

CITY OF ALBUQUERQUE

PUBLIC WORKS DEPARTMENT

ENGINEERING DEVELOPMENT GROUP

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D

SURVEY CONTROL INFORMATION

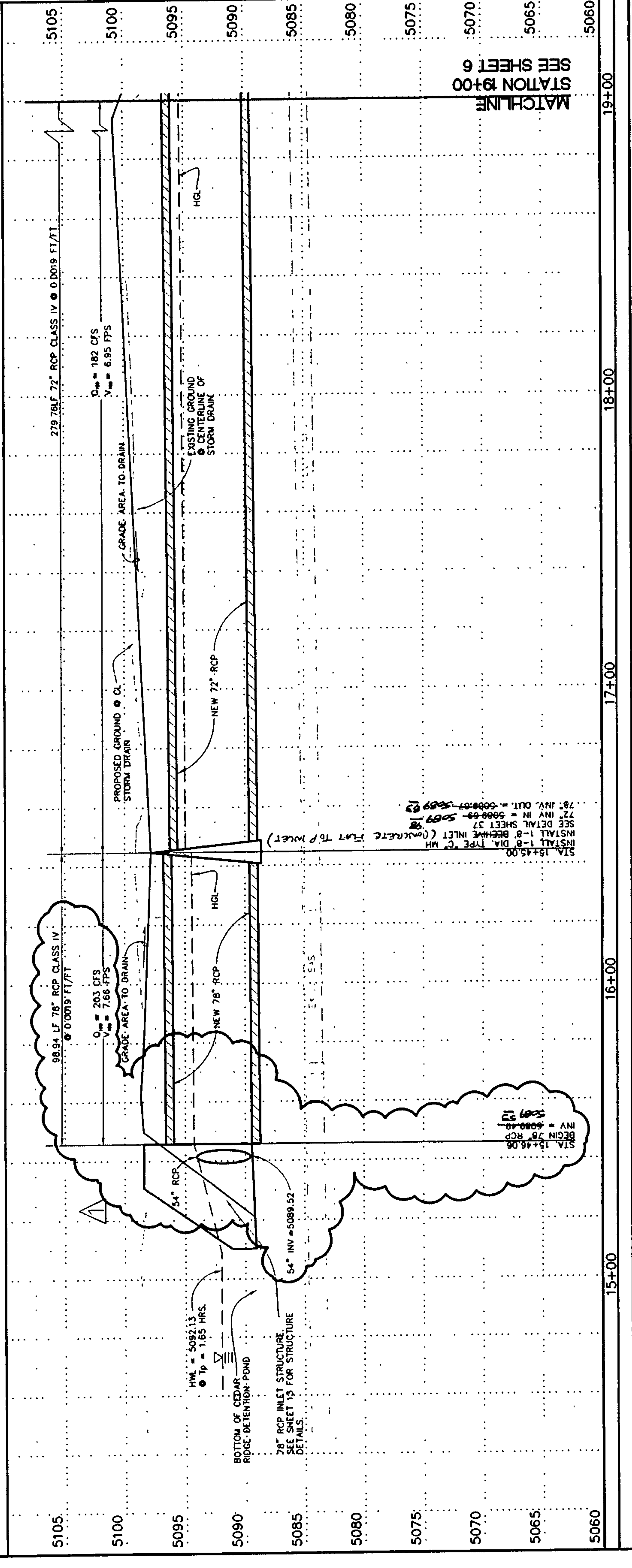
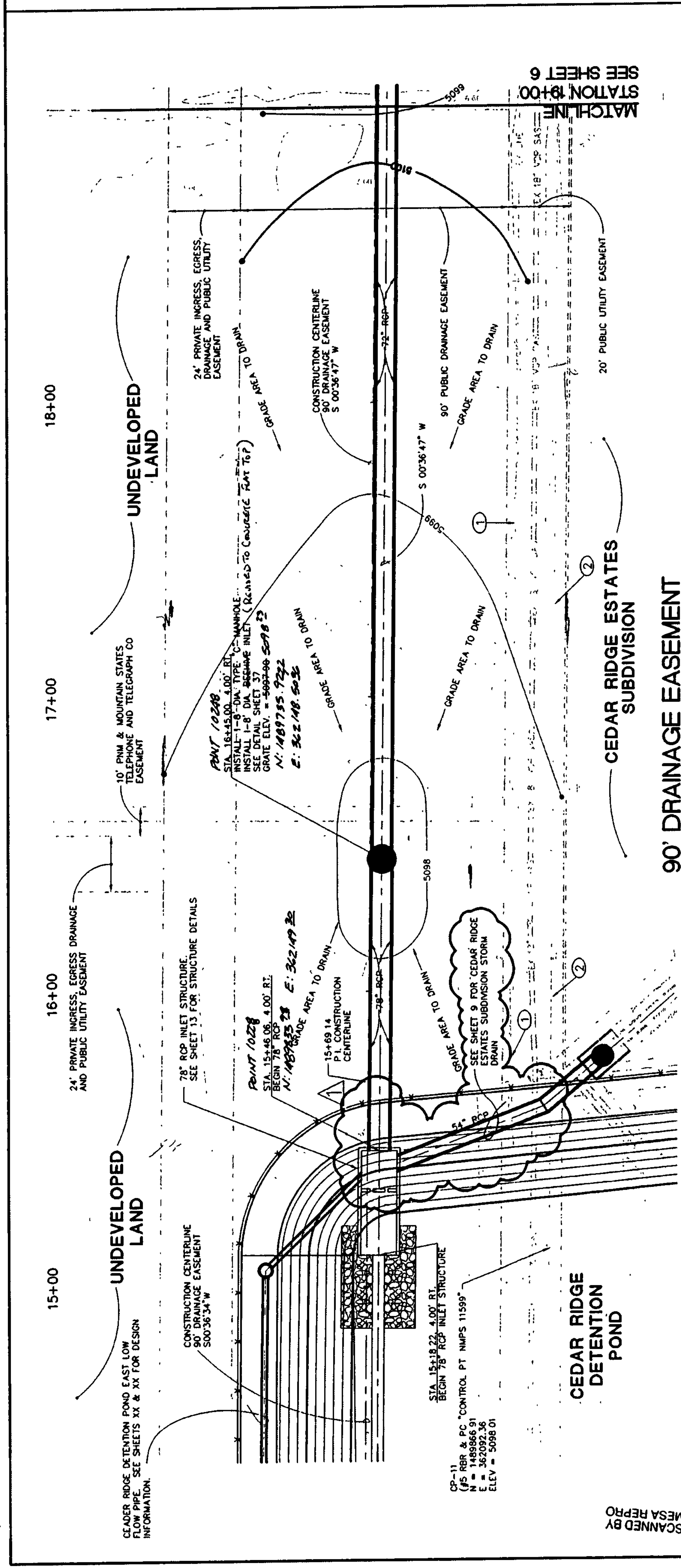
Design Review Committee

City Engineer Approval

City Project No. 538105

Zone Map No. J-10

Sheet 4 of 50



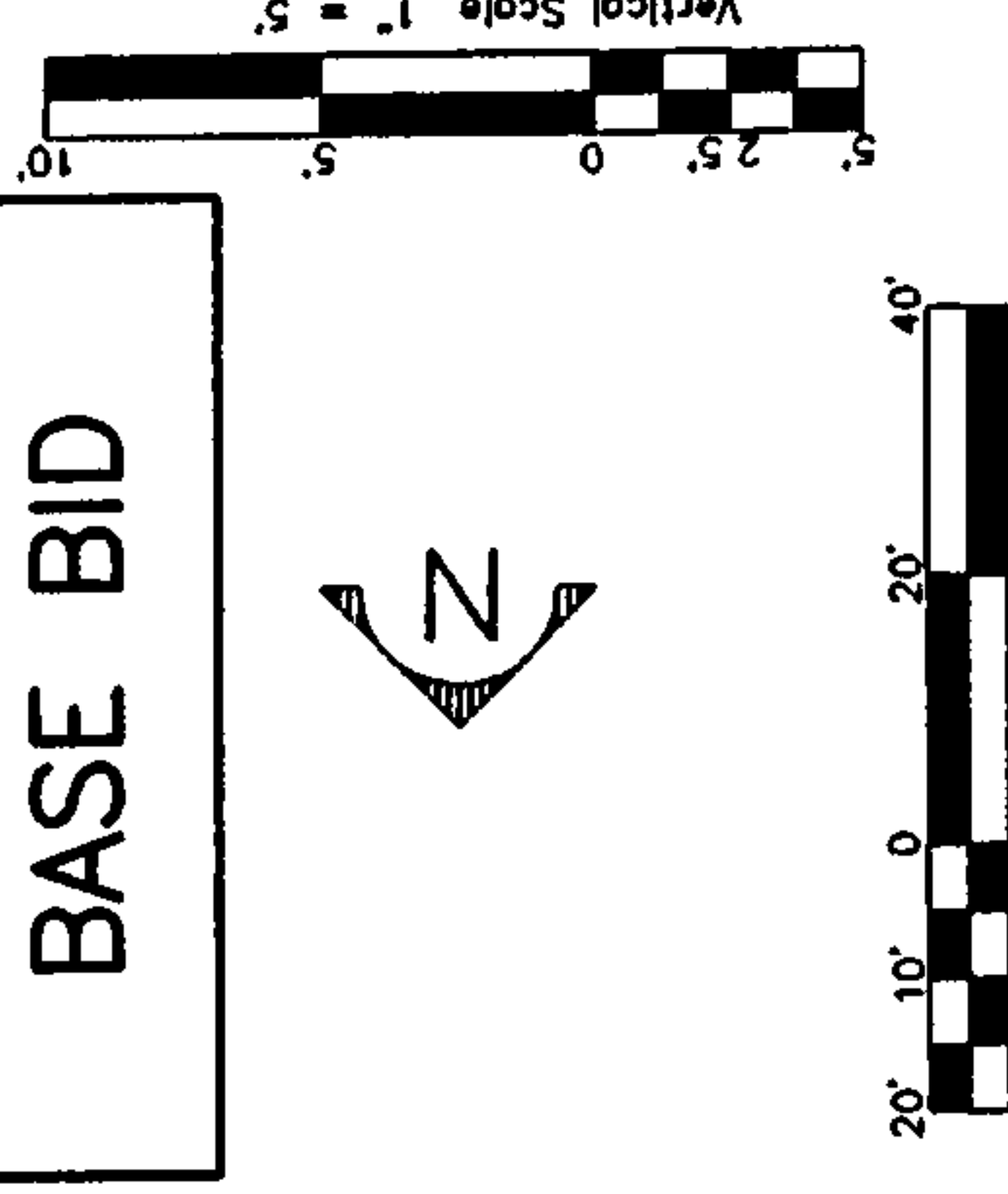
KEYED NOTES:

- ① PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PNM-ELECTRIC (RICK MONITOLA (906) 241-3403).
NOTE PNM-ELECTRIC REQUIRES 4 WEEKS SCHEDULE GROWING TO PERFORM ANY WORK.
- ② PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PNM-GAS (JEFF ROMANOWSKI (906) 241-7753).
NOTE PNM-GAS REQUIRES 4 WEEKS TO SCHEDULE GROWING TO PERFORM ANY WORK.

GENERAL NOTES

1. ALL CONSTRUCTION MUST TAKE PLACE WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY. THE CONTRACTOR SHALL USE SHORING, TRENCH BOXES, ETC. DURING THE TRENCHING AND BACKFILLING PROCESS SO AS NOT TO DAMAGE ANY FACILITIES, UTILITIES, FENCES, WALLS, PAVEMENT, ETC. THAT EXIST ON PRIVATE PROPERTY. ANY DAMAGE TO ITEMS LOCATED ON PRIVATE PROPERTY MUST BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE AT NO ADDITIONAL COST TO THE OWNER.
2. ALL GRADING SHOWN ON THIS SHEET WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THE GRADING SHOWN ON THIS SHEET

BASE BID



 **Smith Engineering Company**
A Full Service Engineering Company
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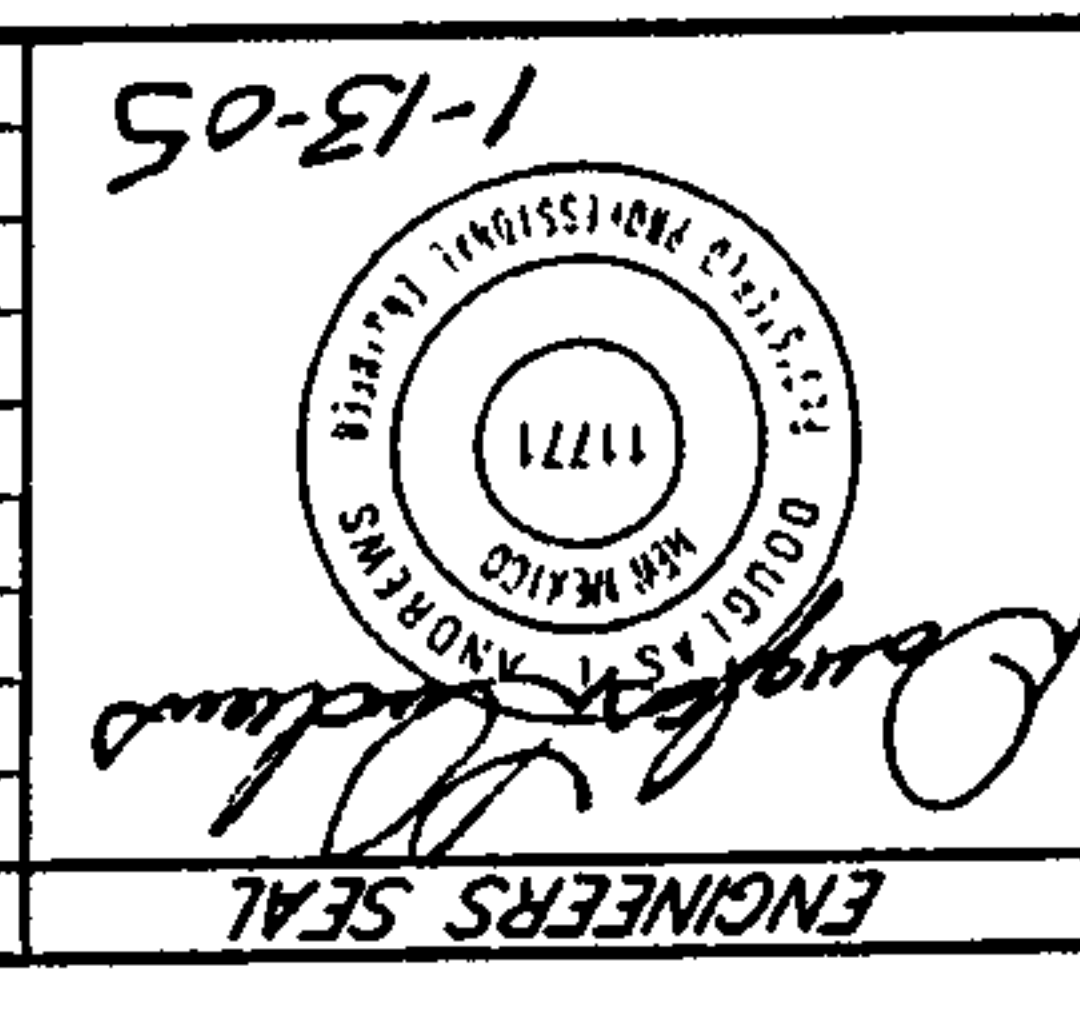
**CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP**

WEST MESA DIVERSION PROJECT PHASE 2D

STORM DRAIN P & P: 90' DRAINAGE EASEMENT: STA 15+18.07 TO 19+00

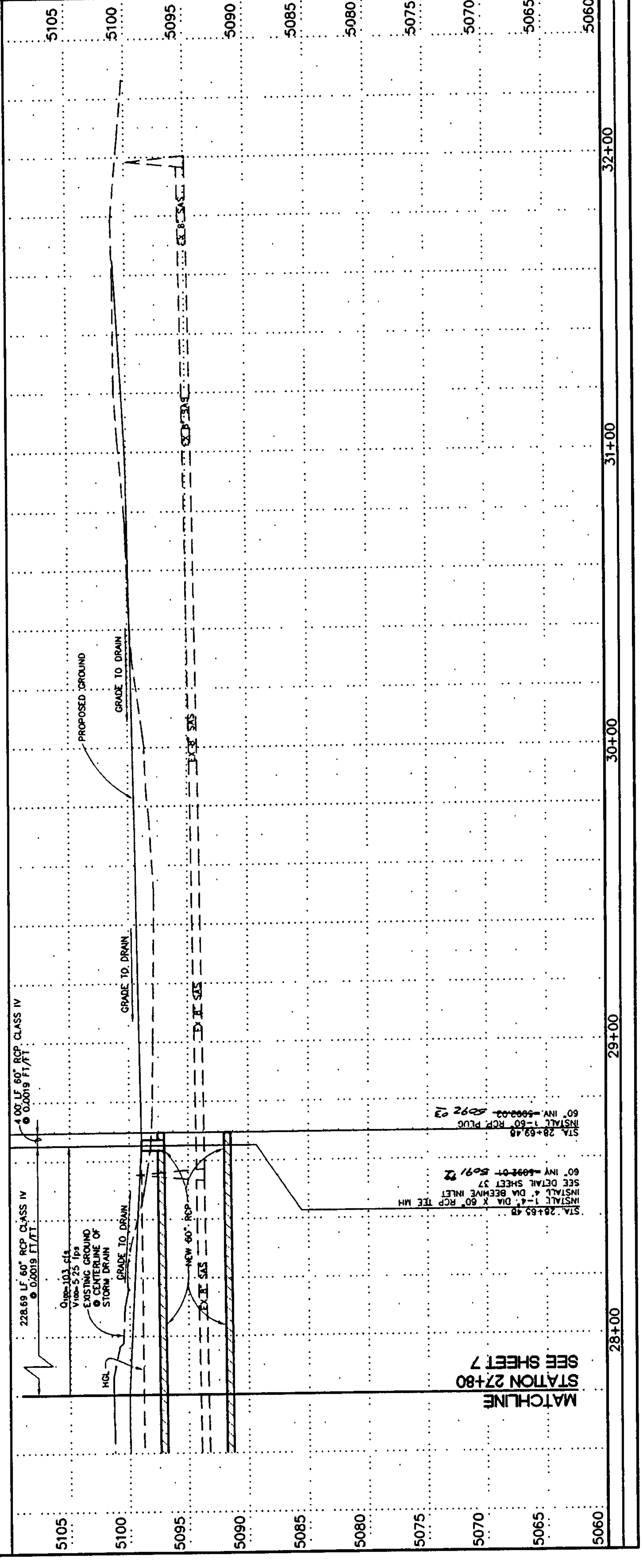
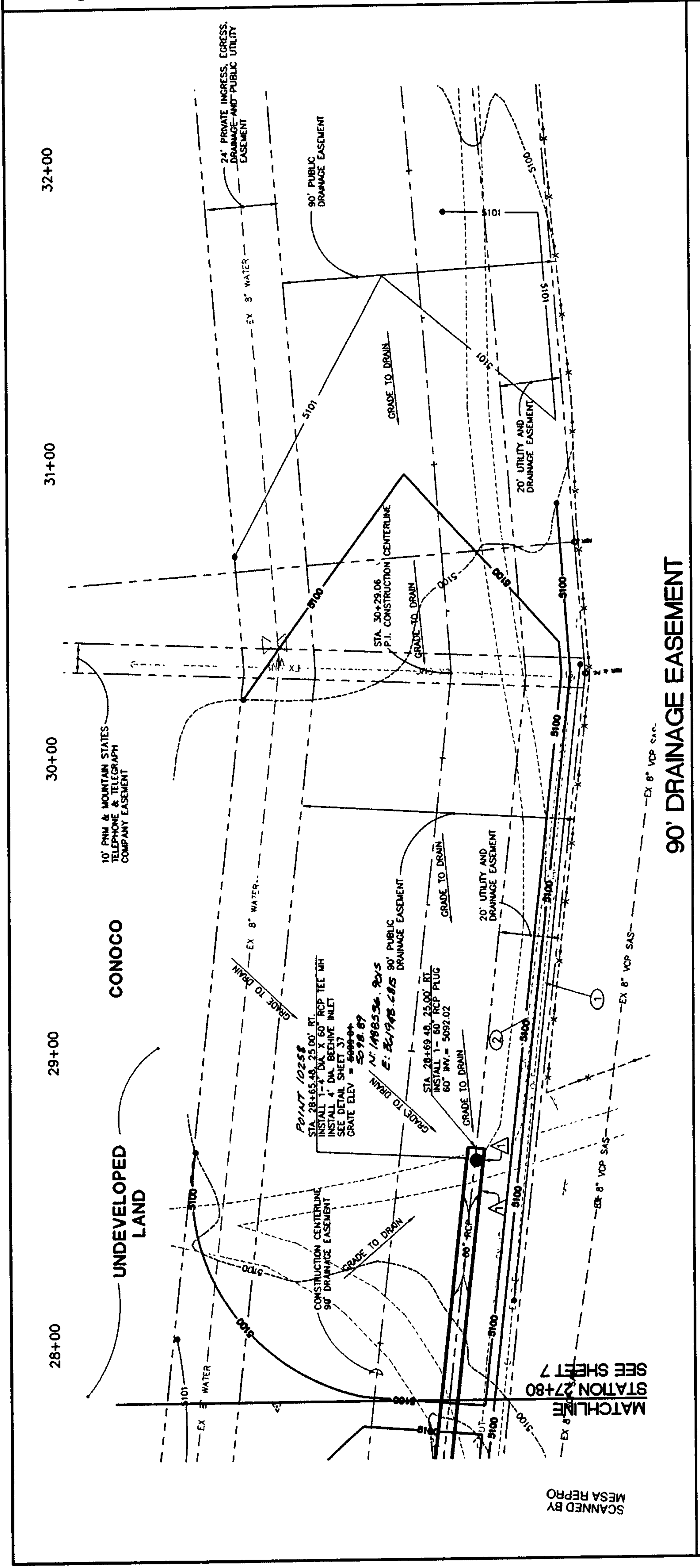
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SURVEY INFORMATION		FIELD NOTES		NO.	
BENCH MARKS		I-40-18 NMSHC/AOS ELEV. 5103.98 FEET (SLD 1925)		CONTRACTOR	
AS BUILT INFORMATION		SALE BROOKERS		DATE	
DATE		BY		NO.	
I-40-18 NMSHC/AOS ELEV. 5103.98 FEET (SLD 1925)		AT BOVENEQUE, AT THE HIGHWAY I-40 AND STATE ROAD		DATE	
STANDARD NMSHC BRASS TABLET, STAMPED		448 (COODS RD., NW) INTERCHANGE. STATION MARK IS A		DATE	
STA I-40-18, SET IN TOP OF A CONCRETE POST PLUSH		MICRO-FILM INFORMATION		NO.	
WITH THE GROUND. (N 1494859.08, E 364150.83)		RECORDED BY		DATE	
NO.					



	DESIGNED BY	DLA	DATE	06/04
	DRAWN BY	DLALL	DATE	06/04
	CHECKED BY	DLA	DATE	06/04
REVISIONS				
NO.	DATE	REMARKS	BY	
1/10/05	Δ	CEDAR RIDGE STORM DRAIN REALIGNMENT	DLA	

Vertical Scale 1" = 5'



KEYED NOTES:

1

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PNM-ELECTRIC (RICK MONTOYA (505) 241-3403).
NOTE: PNM-ELECTRIC REQUIRES A WEEKS TO SCHEDULE CREWS TO PERFORM ANY WORK.

2

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH ONEST (MARTY ANN JOHNSON (505) 240-6567).
NOTE: ONEST REQUIRES A WEEKS TO SCHEDULE CREWS TO PERFORM ANY WORK.

AS BUILT INFORMATION

CONTRACTOR: Smith Engineering

DATE: 8/15/20

BY: BLK/STV

REVISIONS

NO. DATE

REMARKS

DESIGNED BY: DLA

DRAWN BY: DLA

CHECKED BY: DLA

DATE: 06/04

DATE: 06/04

ENGINEER'S SEAL

11-15-21

17771

11/5/04

STORM DRAIN PIPE REALIGNMENT

DLA

BY

DATE

NO.

FIELD NOTES

SURVEY INFORMATION

BENCH MARKS

CONTRACTOR: Smith Engineering

DATE: 8/15/20

BY: BLK/STV

REVISIONS

NO. DATE

REMARKS

DESIGNED BY: DLA

DRAWN BY: DLA

CHECKED BY: DLA

DATE: 06/04

DATE: 06/04

GENERAL NOTES

1. ALL CONSTRUCTION MUST TAKE PLACE WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY. THE CONTRACTOR SHALL USE SHORING, BRACING, BODIES, ETC. TO PROTECT EXISTING UTILITIES, FENCES, WALLS, PAVEMENT, ETC. THAT EXIST ON PRIVATE PROPERTY. ANY DAMAGE TO ITEMS LOCATED ON PRIVATE PROPERTY WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE AT NO ADDITIONAL COST TO THE OWNER.

2. ALL GRADING SHOWN ON THIS SHEET WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THE GRADING SHOWN ON THIS SHEET.

BASE BID

Vertical Scale: 1" = 5'

Horizontal Scale: 1" = 20'

1961050

Smith Engineering Company

17771

11/5/04

STORM DRAIN PIPE REALIGNMENT

DLA

BY

DATE

NO.

FIELD NOTES

SURVEY INFORMATION

BENCH MARKS

CONTRACTOR: Smith Engineering

DATE: 8/15/20

BY: BLK/STV

REVISIONS

NO. DATE

REMARKS

DESIGNED BY: DLA

DRAWN BY: DLA

CHECKED BY: DLA

DATE: 06/04

DATE: 06/04

CITY OF ALBUQUERQUE

PUBLIC WORKS DEPARTMENT

ENGINEERING DEVELOPMENT GROUP

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D

STORM DRAIN P & P: 90' DRAINAGE EASEMENT: STA 27+80 TO 29+64.57

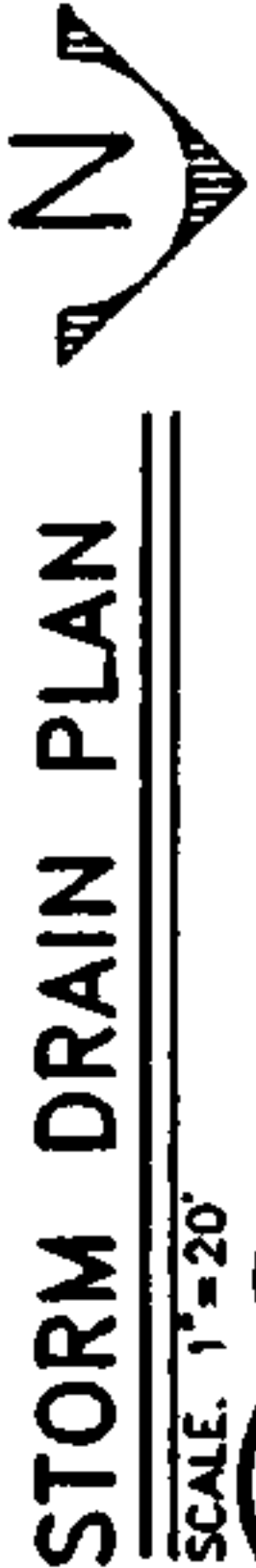
Design Review Committee

City Engineer Approval

City Project No. 538105

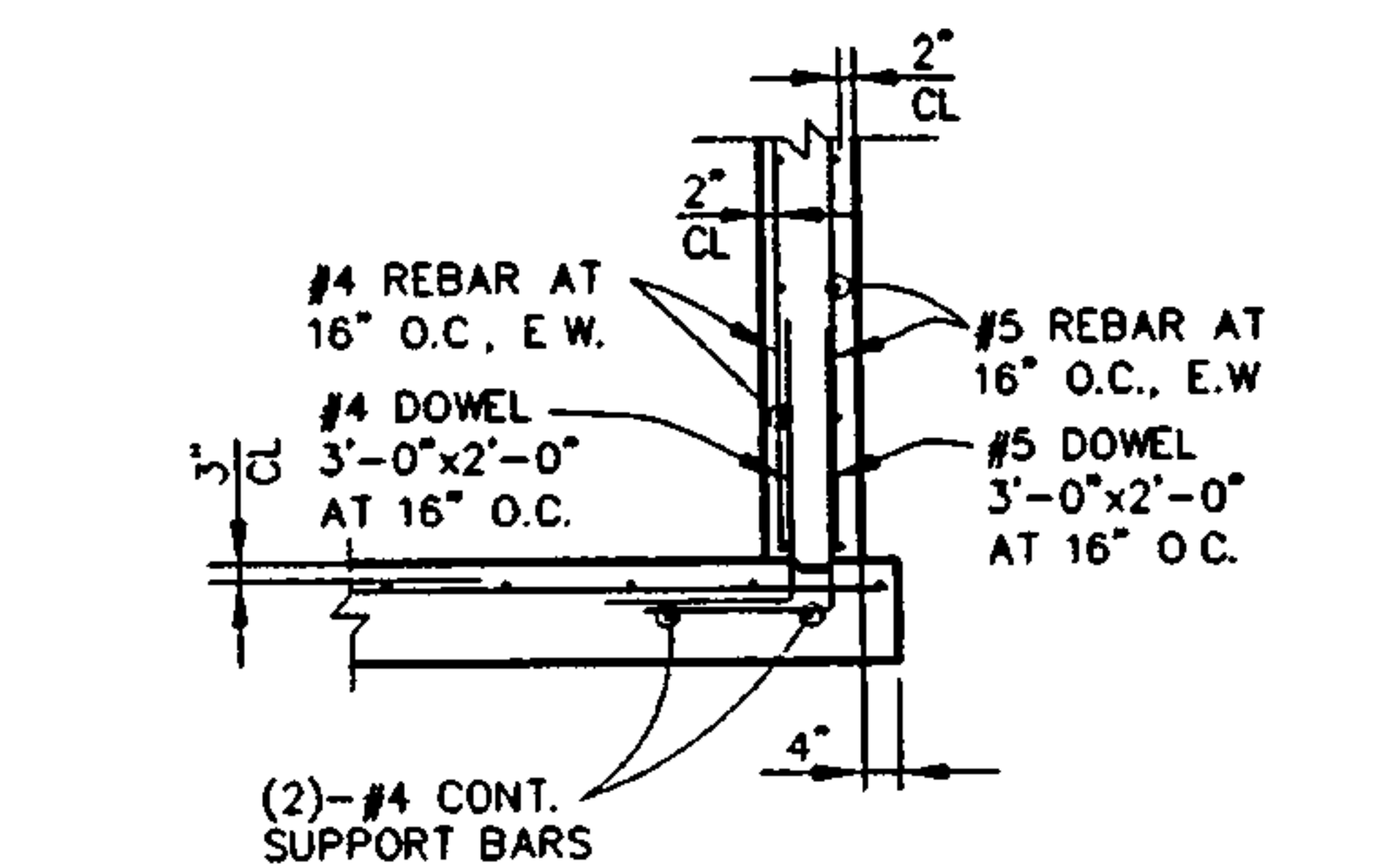
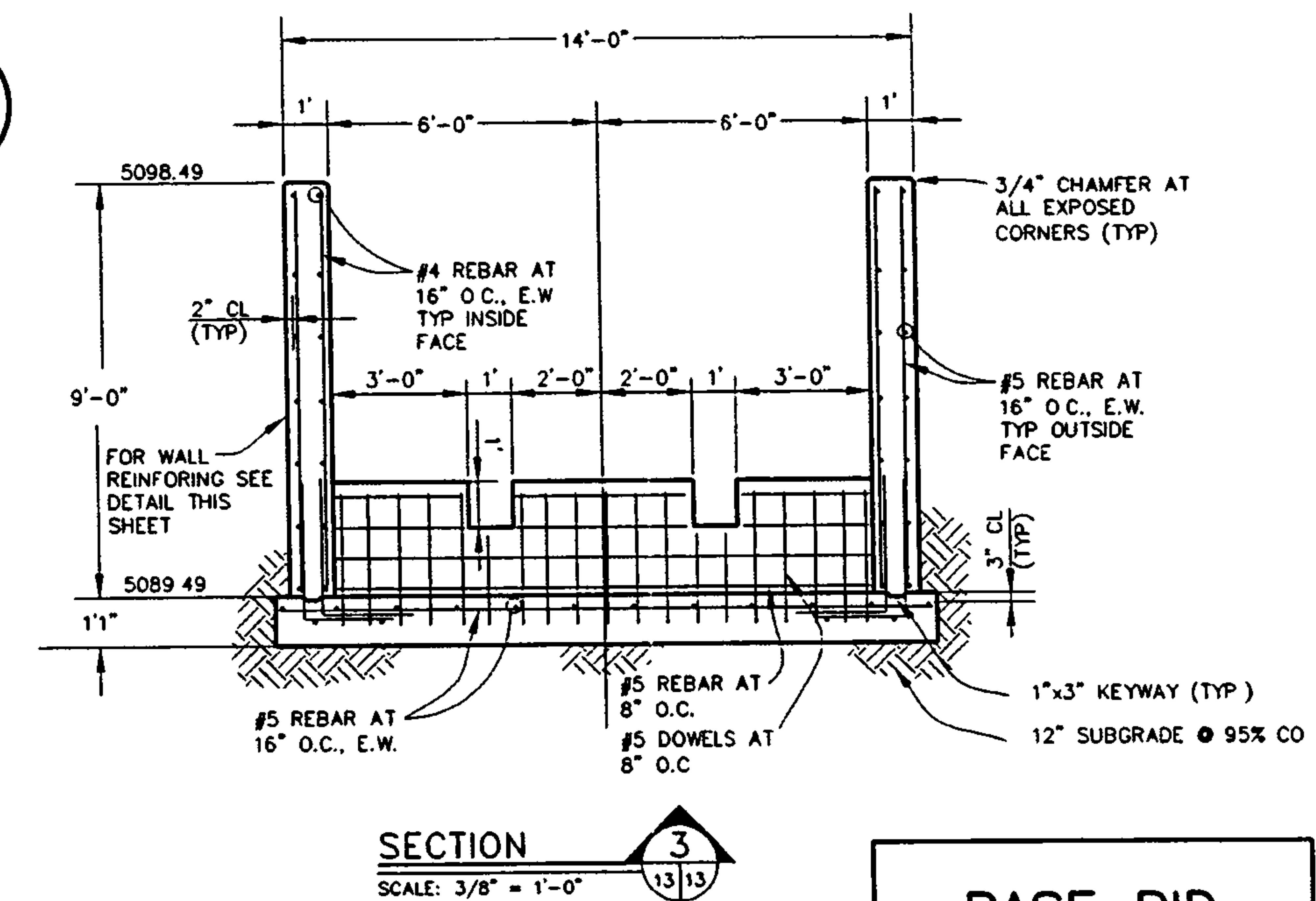
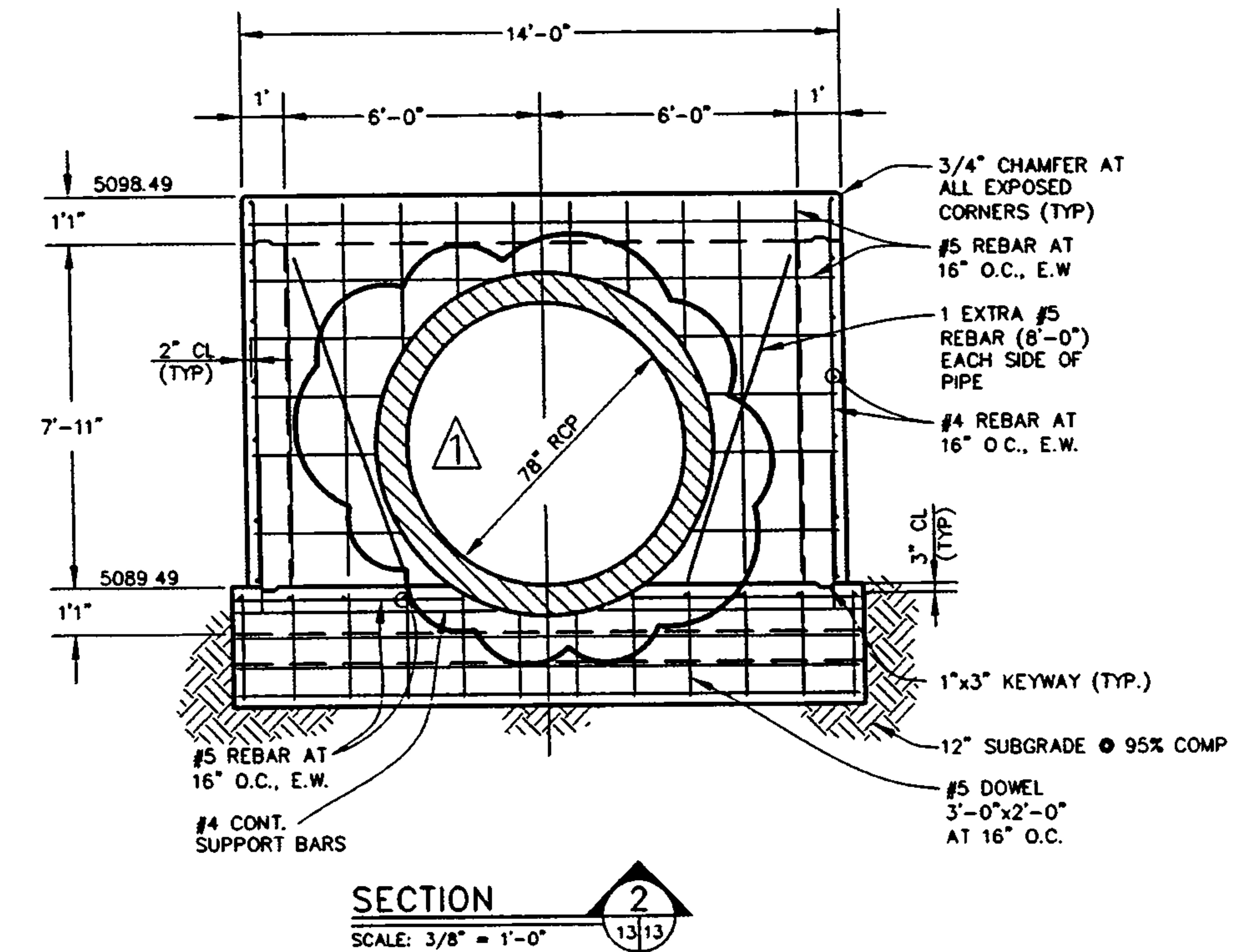
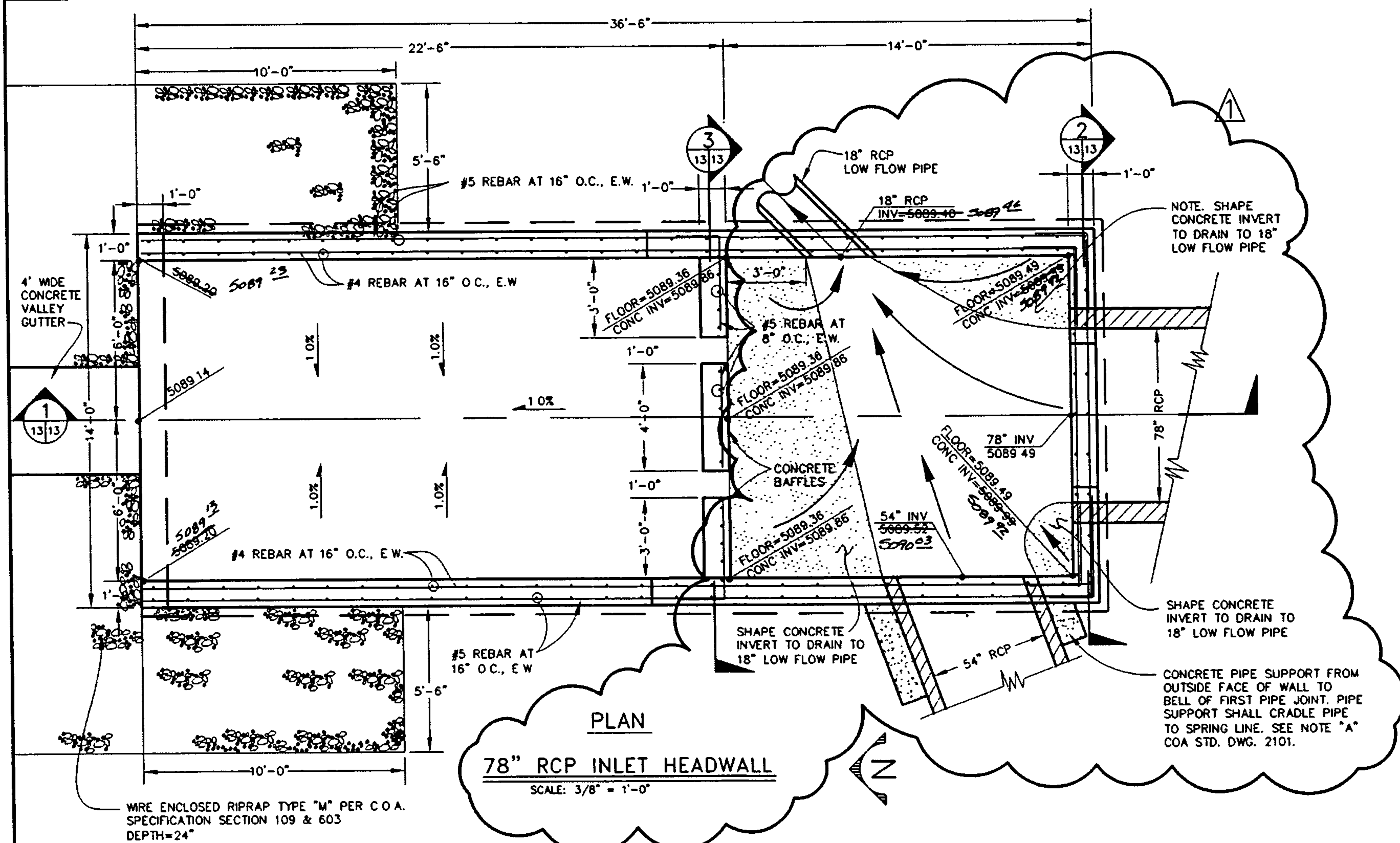
Zone Map No. J-10

Sheet 8 of 50



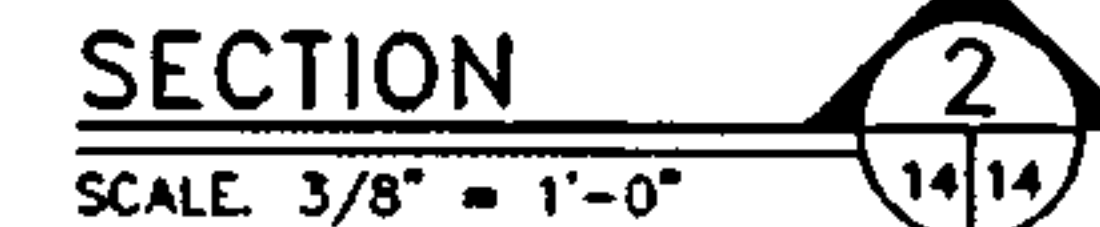
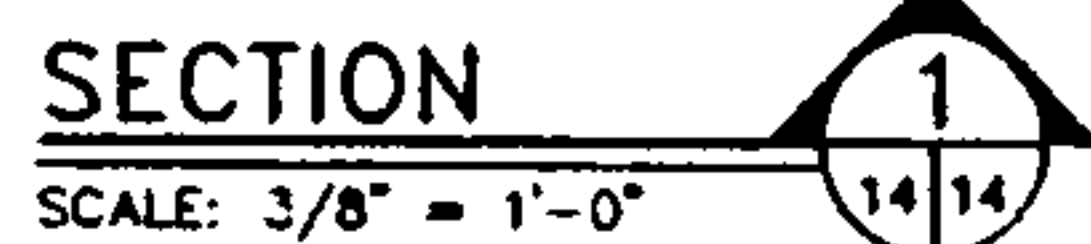
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP	TITLE:	WEST MESA DIVERSION PROJECT PHASE 2D STORM DRAIN P&P: CEDAR RIDGE ESTATES SUBDIVISION					
	Design Review Committee		City Engineer Approval	Last Design Update	No. / Rev. / D.	No. / Rev. / D.	
City Project No.	538705	Zone Map No.	J-10	Sheet	9	Of	50

SCANNED BY
MESA REPRO



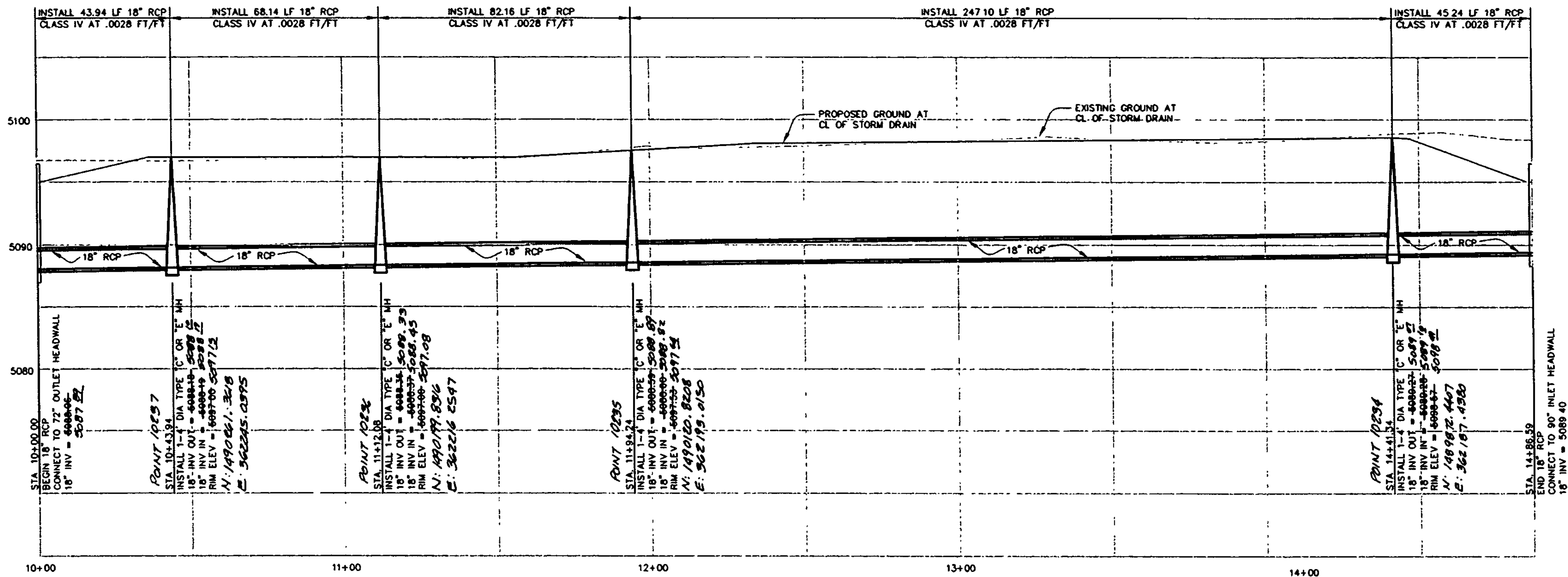
TYPICAL WALL REINFORCING DETAIL
SCALE 3/8" = 1'-0"

Last Design Update	PROJECT PHASE 2D	PROJECT NAME CEDAR RIDGE STORM DRAIN REALIGNMENT	DLA	ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION	
				DOUGLAS J. ADAMS REGISTERED PROFESSIONAL ENGINEER 11771 STATE OF TENNESSEE 1-13-05		FIELD NOTES		1-40-18 NMHC/ACS ELEV 5103.98 FEET (SLD 1929)		CONTRACTOR	
						NO.	BY	DATE	STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN	FIELD BY	DATE
									ALBUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD	VERIFICATION BY	DATE
									448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A		
									STANDARD NMHC BRASS TABLET, STAMPED		
									"STA 1-40-18". SET IN TOP OF A CONCRETE POST FLUSH		
									WITH THE GROUND. (N 1494659.08 E 364150.93)		



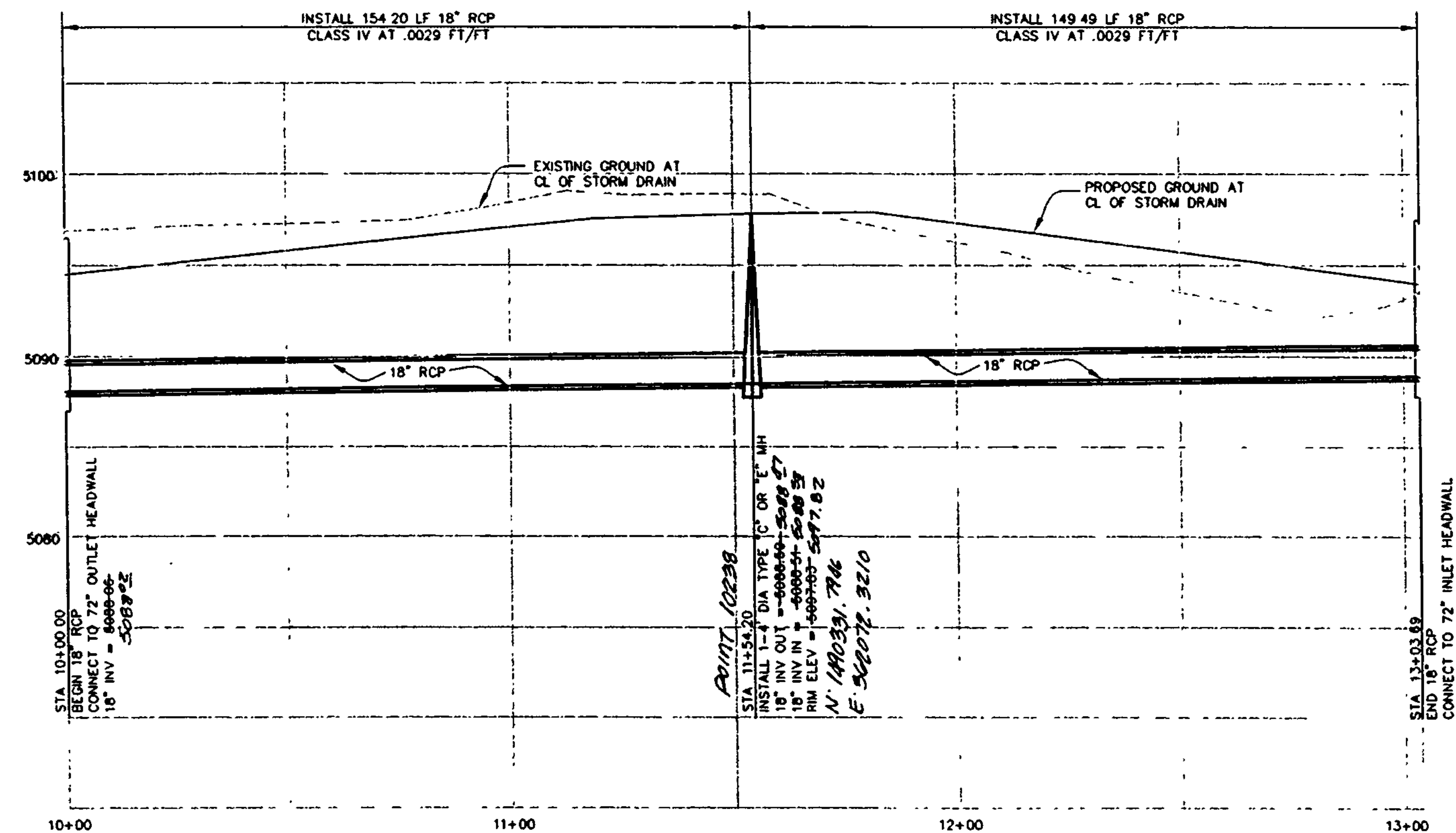
	Smith Engineering Company A Full Service Engineering Company 1400 Tenth Avenue, Suite 1000 Albuquerque, New Mexico 87102	1961650D		NO. DATE	DESIGNED BY	DRAWN BY	CHECKED BY	
		(Empty space for additional information)						
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP								
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D 72' RCP OUTLET STRUCTURE DETAILS								
Design Review Committee		City Engineer Approval		Last Design Update	No. / Day / Yr.		No. / Day / Yr.	
City Project No.		Zone Map No.		Sheet		Of		
538105		J-10		14		50		

SCANNED BY
MESA REPRO



CEDAR RIDGE DETENTION POND EAST LOW FLOW PIPE PROFILE

SCALE: 1"=20' HORIZ
1"=5' VERT



CEDAR RIDGE DETENTION POND NORTH LOW FLOW PIPE PROFILE

SCALE: 1"=20' HORIZ
1"=5' VERT

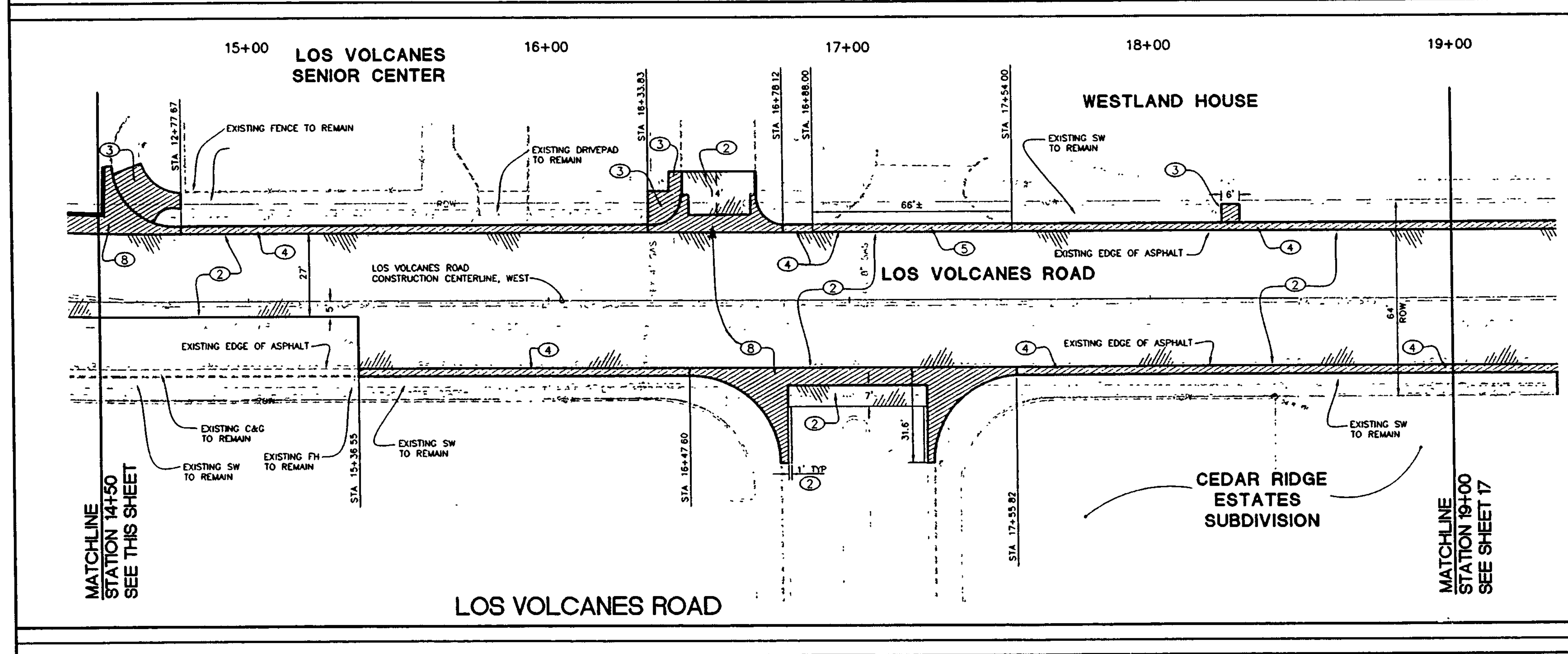
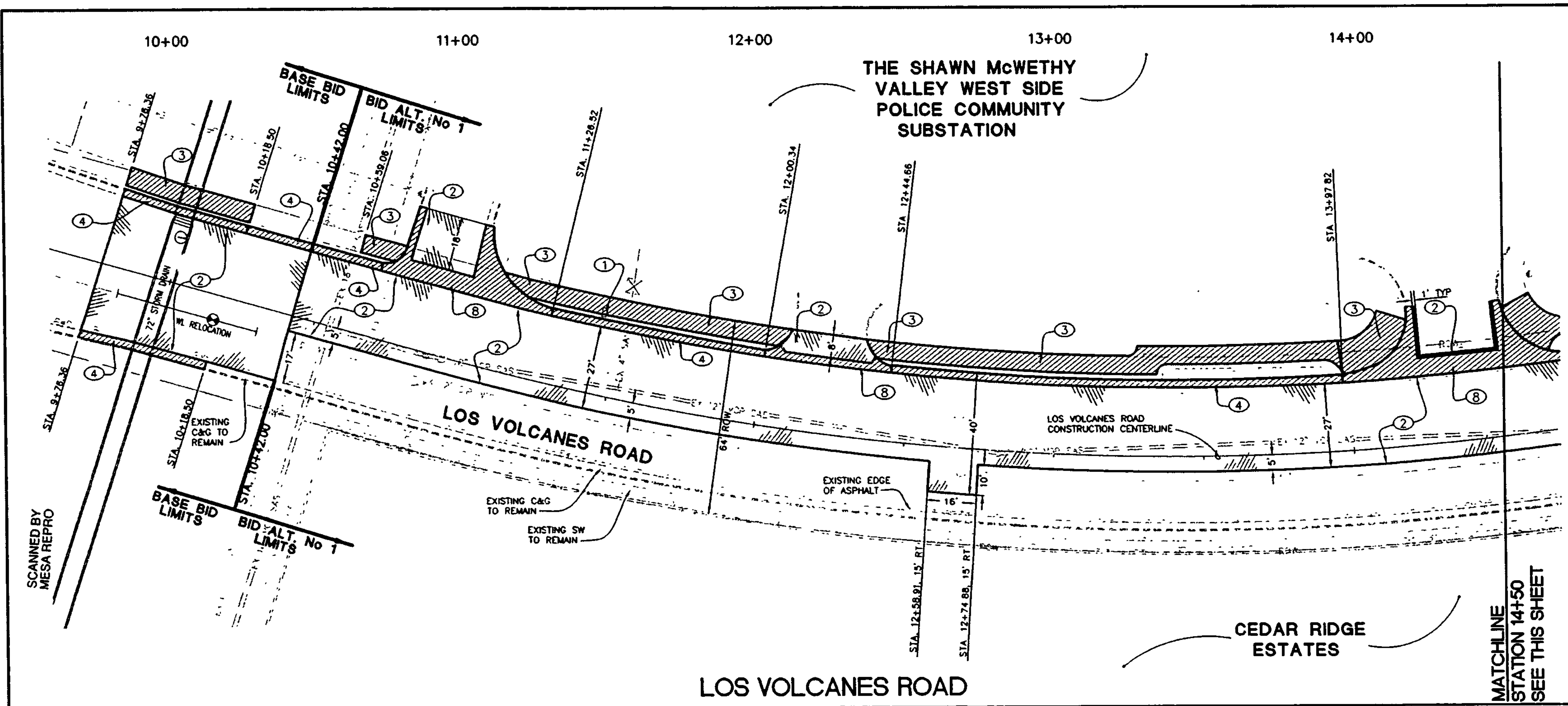
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4	1490138.88	361886.76	5098.75
5	1489851.35	361881.75	5098.24
6	1489851.23	361893.75	5098.00
7	1489799.00	361938.25	5098.24
8	1489810.96	361937.21	5098.00
9	1489817.27	362148.32	5098.74
10	1489829.22	362147.28	5098.50
11	1489868.52	362195.81	5098.74
12	1489868.65	362183.81	5098.50
13	1490080.59	362198.06	5098.24
14	1490080.71	362186.06	5098.00
15	1490154.64	362208.07	5097.00
16	1490157.70	362198.46	5097.00
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19	1490269.48	362255.65	5097.00
20	1490273.20	362244.24	5097.00
21	1490337.58	362206.77	5097.00
22	1490325.58	362206.64	5097.00
23	1489850.98	362197.75	5099.00
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25	1490340.46	361938.89	5098.74
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BASE BID



CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP	
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D MISCELLANEOUS POND DETAILS AND INFORMATION	
Design Review Committee	City Engineer Approval
City Project No. 538105	Zone Map No. J-10
Sheet 15	Of 50

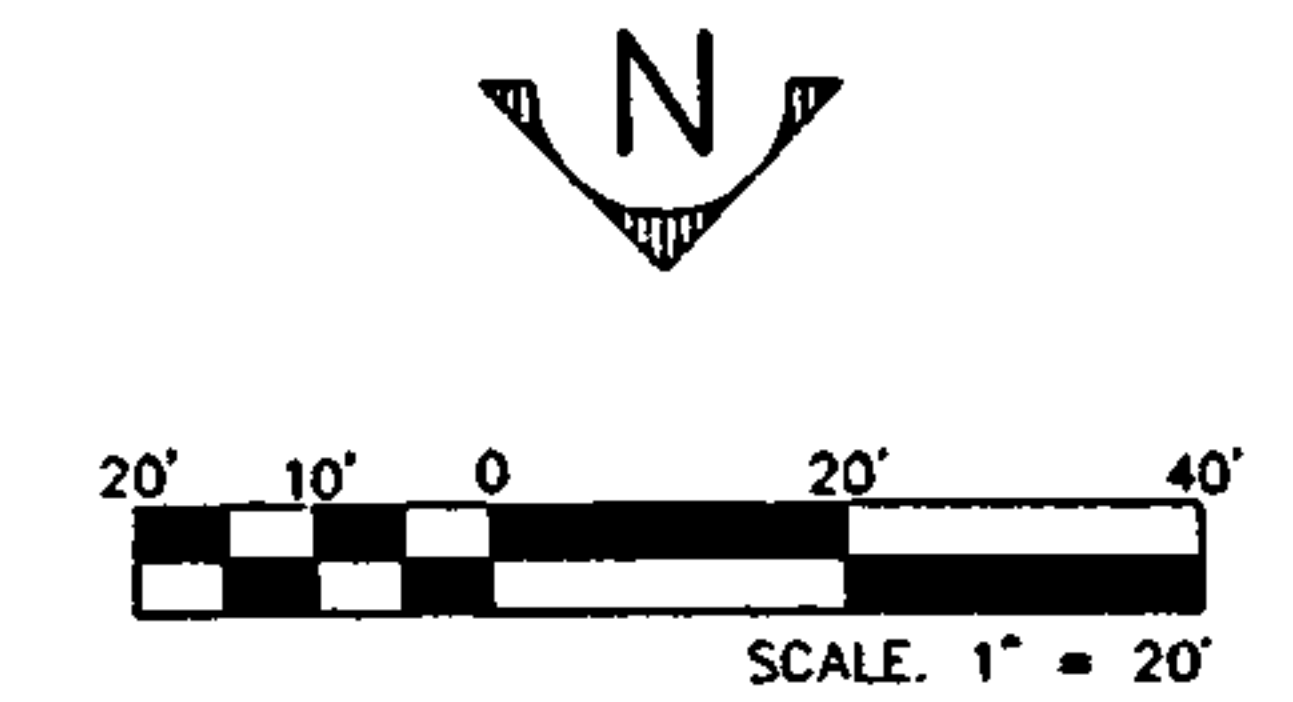
AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEERS SEAL	
CONTRACTOR SCALE	PROPOSED	1-40-18 NMHC/ACS	ELEV. 5103.98 FEET (SLD 1929)	FIELD NOTES	NO.	DATE	BY
DATE	DATE	STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN	ALBUQUERQUE, AT THE HIGHWAY I-40 AND STATE ROAD	NO.	DATE	BY	REMARKS
DATE	DATE	448 (COORS RD. NW) INTERCHANGE. STATION MARK IS A	STANDARD NMHC BRASS TABLET, STAMPED	NO.	DATE	BY	REVISIONS
DATE	DATE	STA 1-40-18. SET IN TOP OF A CONCRETE POST FLUSH	WITH THE GROUND. (N 149489.08 E 364150.03)	NO.	DATE	BY	DESIGN
DATE	DATE	RECORDED BY	NO.	NO.	DATE	BY	CHECKED BY



- KEYED NOTES:**
- 1 REMOVE AND DISPOSE OF EXISTING PULLBOX. REPLACE WITH NEW WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO RECONNECT ALL EXISTING CONDUITS AND WIRING.
 - 2 REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT PER THE PAVEMENT SECTION SHOWN ON SHEET 38 WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
 - 3 REMOVE AND DISPOSE EXISTING SIDEWALK TO LIMITS SHOWN. INSTALL NEW SIDEWALK (PER COA STD. DWG 2430) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES. REPLACE ALL WHEELCHAIR RAMPS PER COA STD. DWGS 2426, 2440 AND 2441 (WHICHEVER IS APPLICABLE).
 - 4 REMOVE AND DISPOSE EXISTING STANDARD CURB AND GUTTER TO LIMITS SHOWN. INSTALL NEW STANDARD CURB AND GUTTER (PER COA STD. DWG 2415A) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
 - 5 CONTRACTOR TO SAWCUT EXISTING CONCRETE IN LINE WITH EXISTING CURB AND GUTTER.
 - 6 NOT USED.
 - 7 NOT USED.
 - 8 REMOVE AND DISPOSE EXISTING CONCRETE VALLEY GUTTER AND FILLET TO LIMITS SHOWN. INSTALL NEW CONCRETE VALLEY GUTTER AND FILLET (COA STD. DWG 2420) WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.

**BASE BID
&
BID ALTERNATE
NO. 1**

- GENERAL REMOVAL NOTES:**
1. CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY.
 2. ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.



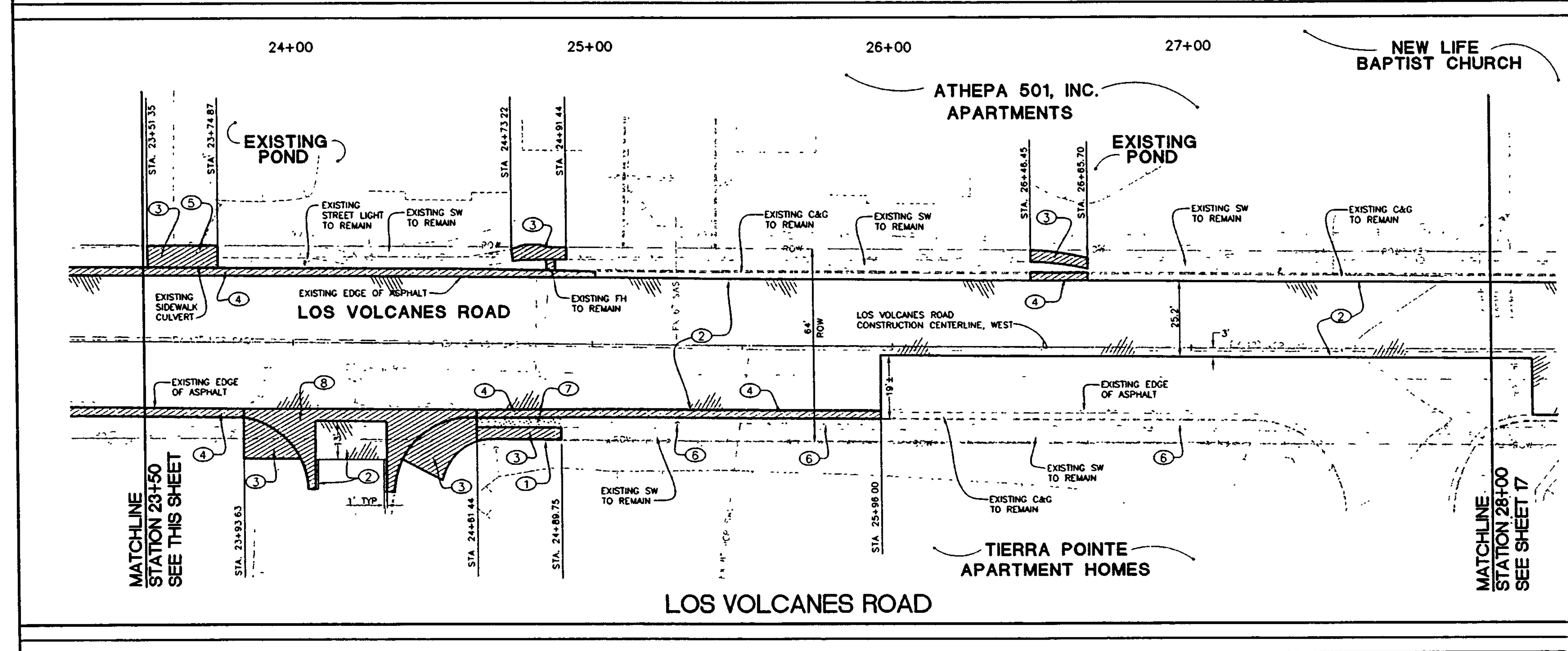
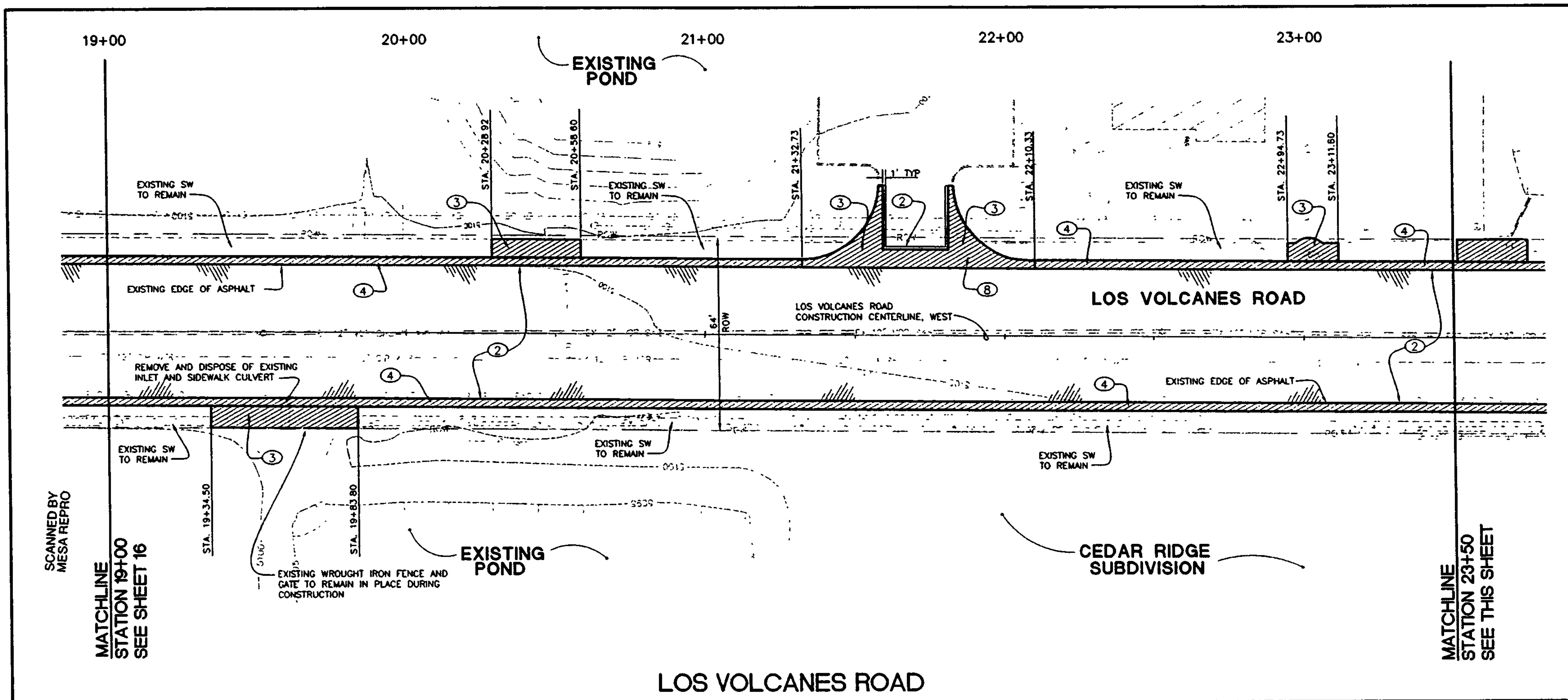
Smith Engineering Company
196105D
A Full Service Engineering Company
11771
DESIGNED BY DLA DATE 06/04
DRAWN BY DLA DATE 06/04
CHECKED BY DLA DATE 06/04

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP			
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D			
REMOVAL SHEET: LOS VOLCANES ROAD: STA. 10+00 TO 19+00			
Design Review Committee	City Engineer Approval	Lead Design Update	
City Project No.	Zone Map No.	Sheet	Of
538105	J-10	16	50

AS BUILT INFORMATION			
CONTRACTOR SCALE	DATE	DATE	DATE
1-40-18 NWSHC/ACS	11/22/04	11/22/04	11/22/04
STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN	DATE	DATE	DATE
ALBUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD	DATE	DATE	DATE
448 (COORS RD. NW) INTERCHANGE. STATION MARK IS A	DATE	DATE	DATE
STANDARD INSHC BRASS TABLET STAMPED	DATE	DATE	DATE
"STA 1-40-18" SET IN TOP OF A CONCRETE POST FLUSH	DATE	DATE	DATE
WITH THE GROUND. (N 149459.08, E 384150.83)	DATE	DATE	DATE
RECORDED BY	NO.	NO.	NO.

ENGINEER'S SEAL
DANIEL J. JONES
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
11771
12/04

NO.	DATE	REMARKS	BY
1	06/04	DESIGN	DLA
2	06/04	REVISIONS	DLA
3	06/04		
4	06/04		



KEYED NOTES:

- REMOVE, STORE AND REPLACE EXISTING WROUGHT IRON FENCE.
- REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT PER THE PAVEMENT SECTION SHOWN ON SHEET 38 WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- REMOVE AND DISPOSE EXISTING SIDEWALK TO LIMITS SHOWN. INSTALL NEW SIDEWALK (PER COA STD. DWG 2430) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES. REPLACE ALL WHEELCHAIR RAMPS PER COA STD. DWGS 2426, 2440 AND 2441 (WHICHEVER IS APPLICABLE).
- REMOVE AND DISPOSE EXISTING STANDARD CURB AND GUTTER TO LIMITS SHOWN. INSTALL NEW STANDARD CURB AND GUTTER (PER COA STD. DWG 2415A) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- REMOVE AND DISPOSE OF EXISTING SIDEWALK CULVERT. REPLACE WHEN TRENCHING AND BACKFILLING IN AREA IS COMPLETE.
- CONTRACTOR TO MAINTAIN (KEEP ALIVE) ALL TREES AND GRASS IN THE AREA. IF (DUE TO CONSTRUCTION) THE GRASS OR TREES DIE, THE CONTRACTOR SHALL REMOVE AND DISPOSE THE DEAD GRASS/TREES AND REPLACE THEM AT NO ADDITIONAL COST TO THE OWNER. ALL IRRIGATION RELATED TO THE VEGETATION MENTIONED ABOVE THAT IS DAMAGED DURING CONSTRUCTION SHALL BE REMOVED, DISPOSED OF AND REPLACED WITH NEW AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR TO REMOVE AND DISPOSE OF GRASS & TREES. REPLACE GRASS AND TREES WHEN CONSTRUCTION OF THE AREA IS COMPLETE. CONTRACTOR TO REPLACE ANY IRRIGATION DAMAGED DURING CONSTRUCTION IN THE AREA.
- REMOVE AND DISPOSE EXISTING CONCRETE VALLEY GUTTER AND FILLET TO LIMITS SHOWN. INSTALL NEW CONCRETE VALLEY GUTTER AND FILLET (COA STD. DWG 2420) WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.

GENERAL REMOVAL NOTES:

- CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY.
- ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

BID ALTERNATE NO. 1

GENERAL REMOVAL NOTES:

1. CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY.

2. ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

ENGINEERS SEAL

David J. Linderoth

NO. DATE

REMARKS

DESIGN

DATE

DESIGNED BY

DRAWN BY

CHECKED BY

SMITH ENGINEERING COMPANY

1961050

CITY OF ALBUQUERQUE

PUBLIC WORKS DEPARTMENT

ENGINEERING DEVELOPMENT GROUP

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D

REMOVAL SHEET: LOS VOLCANES ROAD: STA. 19+00 TO 28+00

Design Review Committee

City Engineer Approval

Zone Map No.

Sheet

NO. DATE

REMARKS

DESIGN

DATE

DESIGNED BY

DRAWN BY

CHECKED BY

Zone Map No.

Sheet

538105

J-10

17

50

NO. DATE

REMARKS

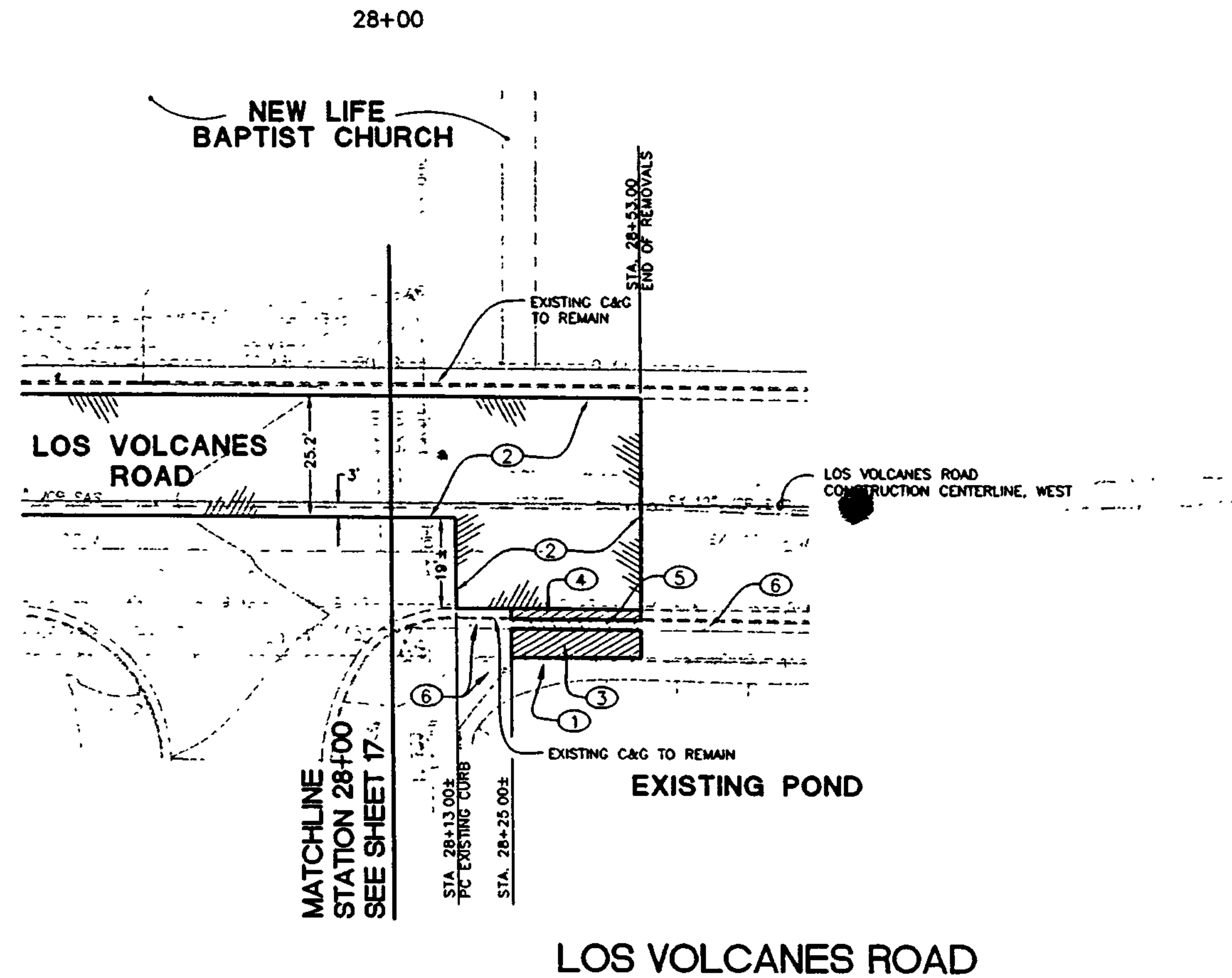
DESIGN

DATE

DESIGNED BY

DRAWN BY

CHECKED BY



SCANNED BY
MESA REPRO

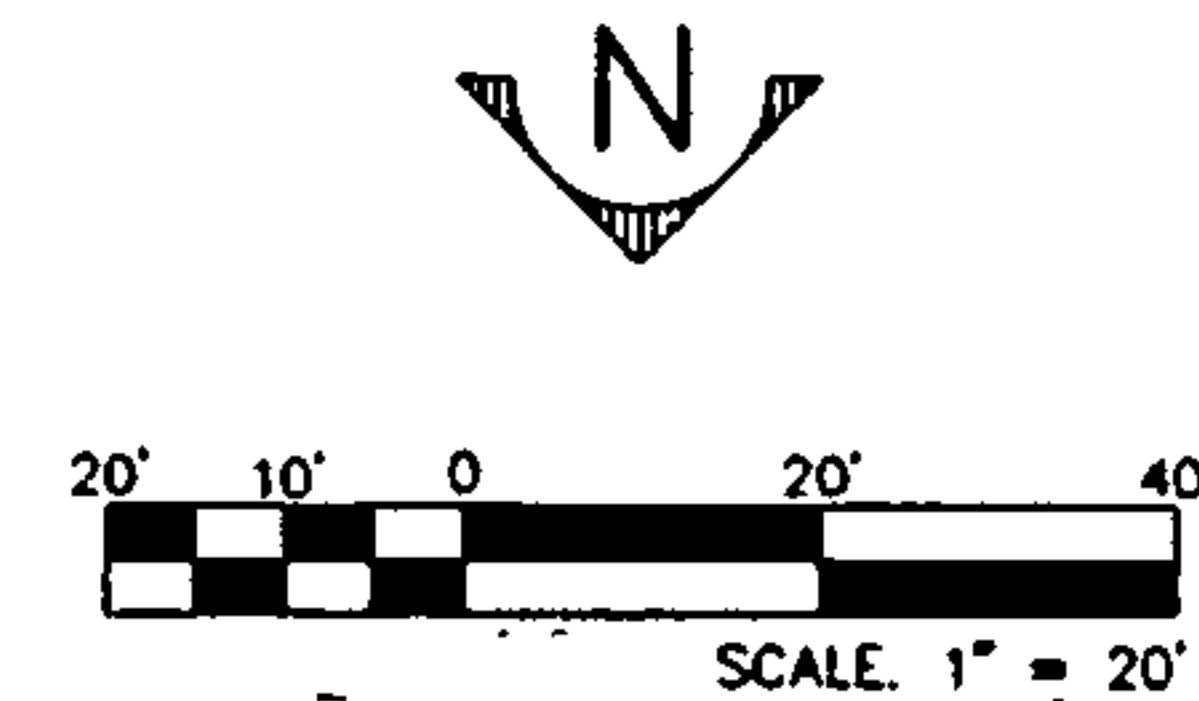
○ KEYED NOTES:

- 1 REMOVE, STORE AND REPLACE EXISTING WROUGHT IRON FENCE.
- 2 REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT PER THE PAVEMENT SECTION SHOWN ON SHEET 38 WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
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- 5 CONTRACTOR TO REMOVE AND DISPOSE OF GRASS & TREES. REPLACE GRASS AND TREES WHEN CONSTRUCTION OF THE AREA IS COMPLETE. CONTRACTOR TO REPLACE ANY IRRIGATION DAMAGED DURING CONSTRUCTION IN THE AREA.
- 6 CONTRACTOR TO MAINTAIN (KEEP ALIVE) ALL TREES AND GRASS IN THE AREA. IF (DUE TO CONSTRUCTION) THE GRASS OR TREES DIE, THE CONTRACTOR SHALL REMOVE AND DISPOSE THE DEAD GRASS/TREES AND REPLACE THEM AT NO ADDITIONAL COST TO THE OWNER. ALL IRRIGATION RELATED TO THE VEGETATION MENTIONED ABOVE THAT IS DISTURBED DURING CONSTRUCTION SHALL BE REMOVED, DISPOSED OF AND REPLACED WITH NEW AT NO ADDITIONAL COST TO THE OWNER.

BID ALTERNATE
NO. 1

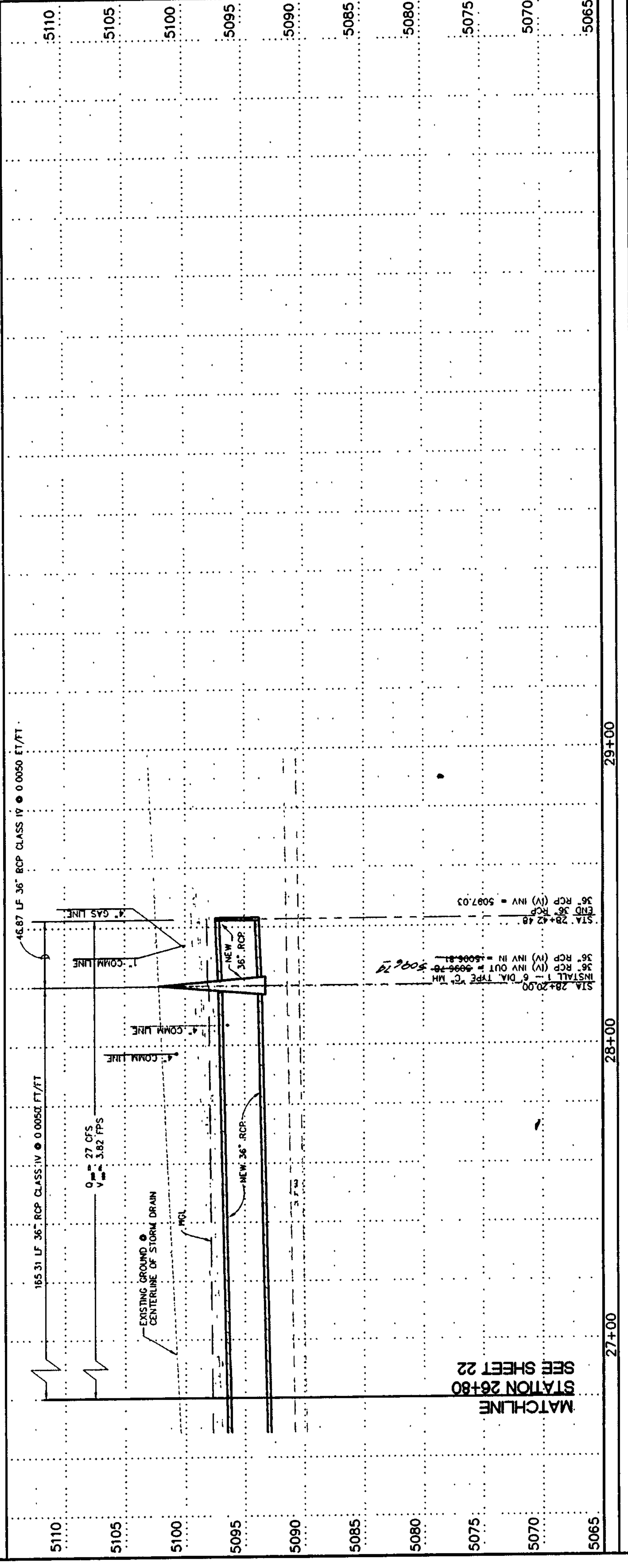
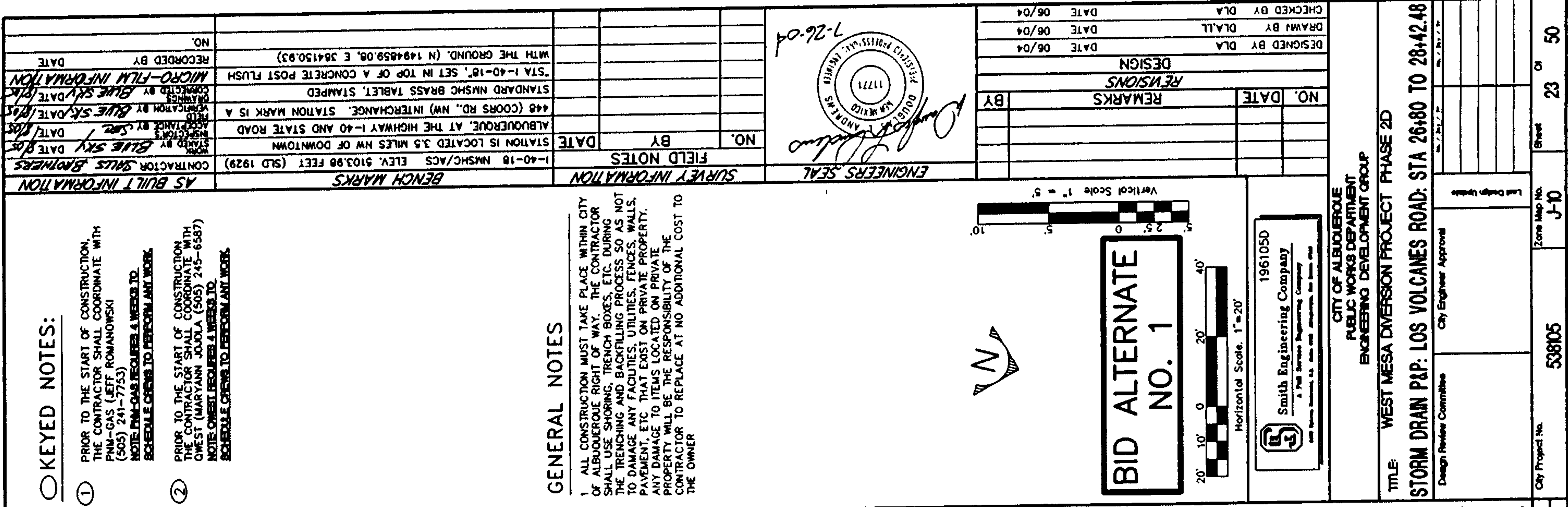
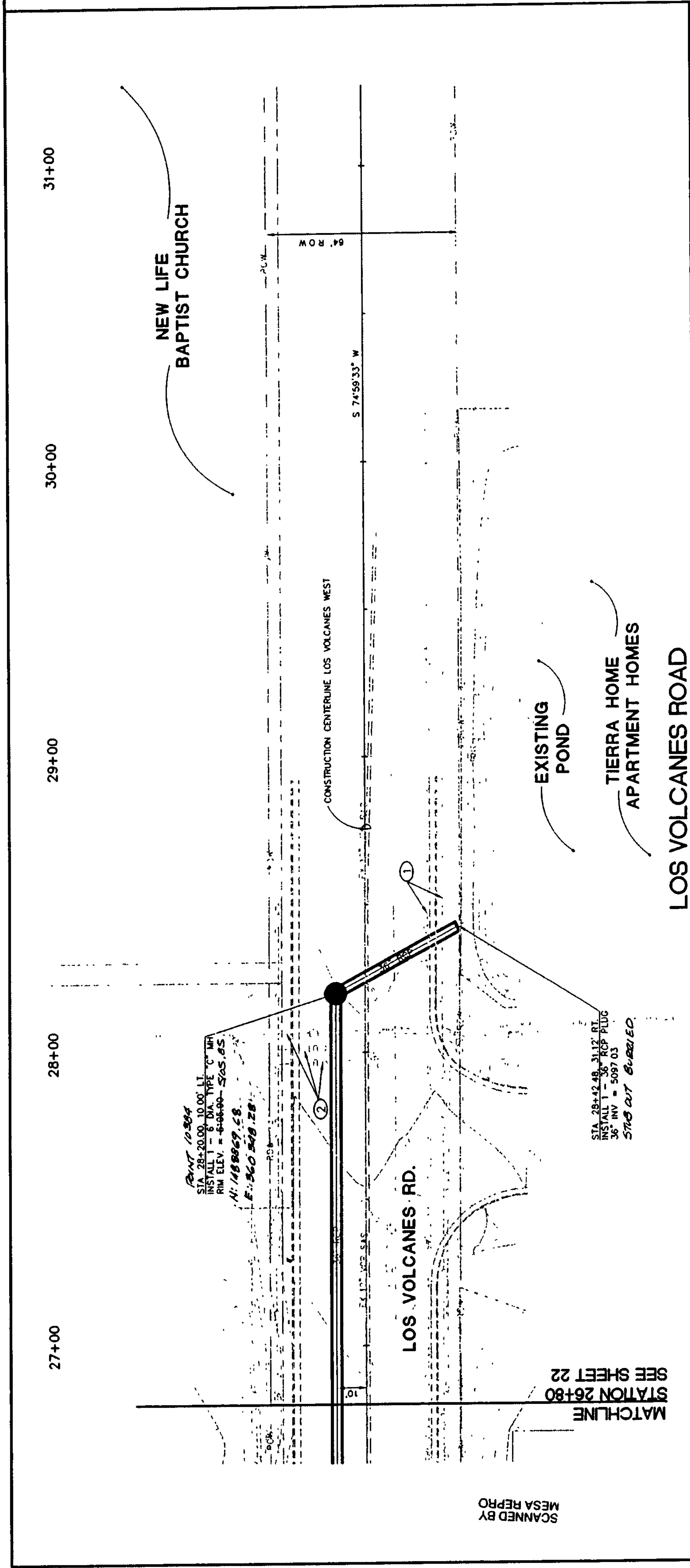
GENERAL REMOVAL NOTES:

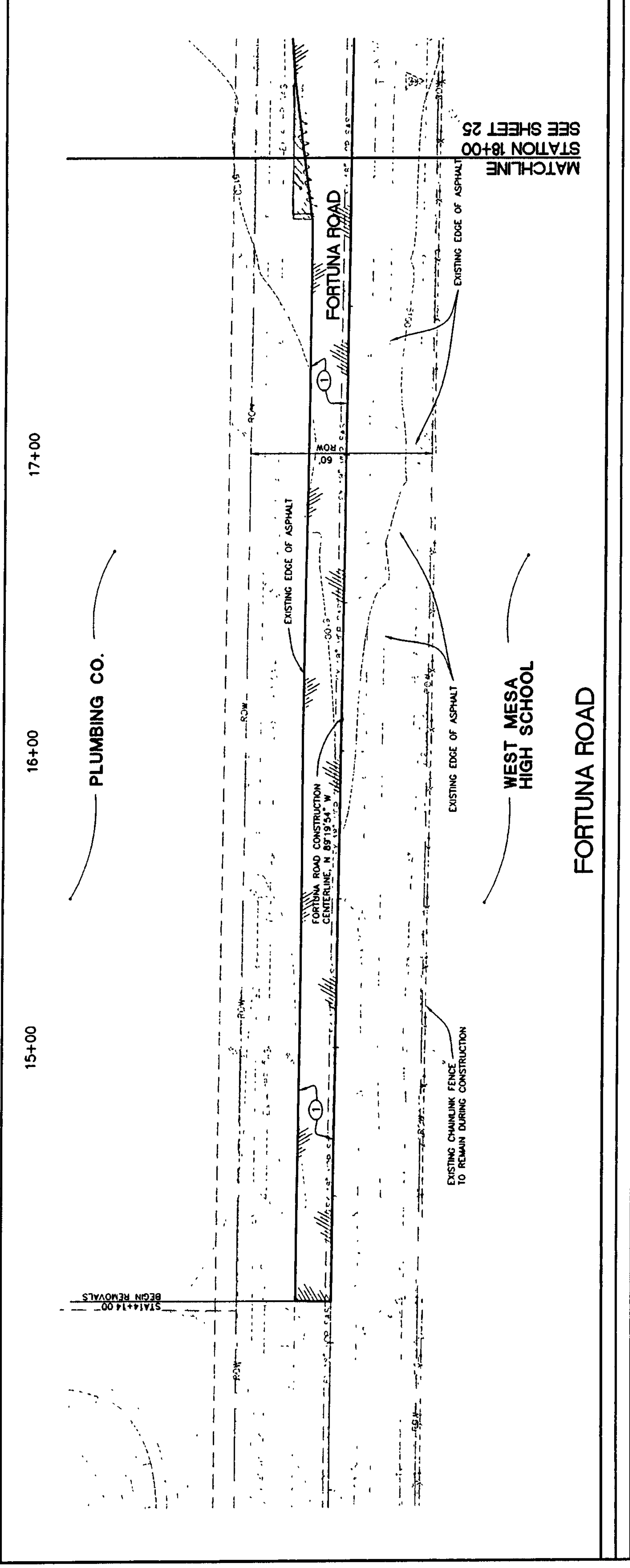
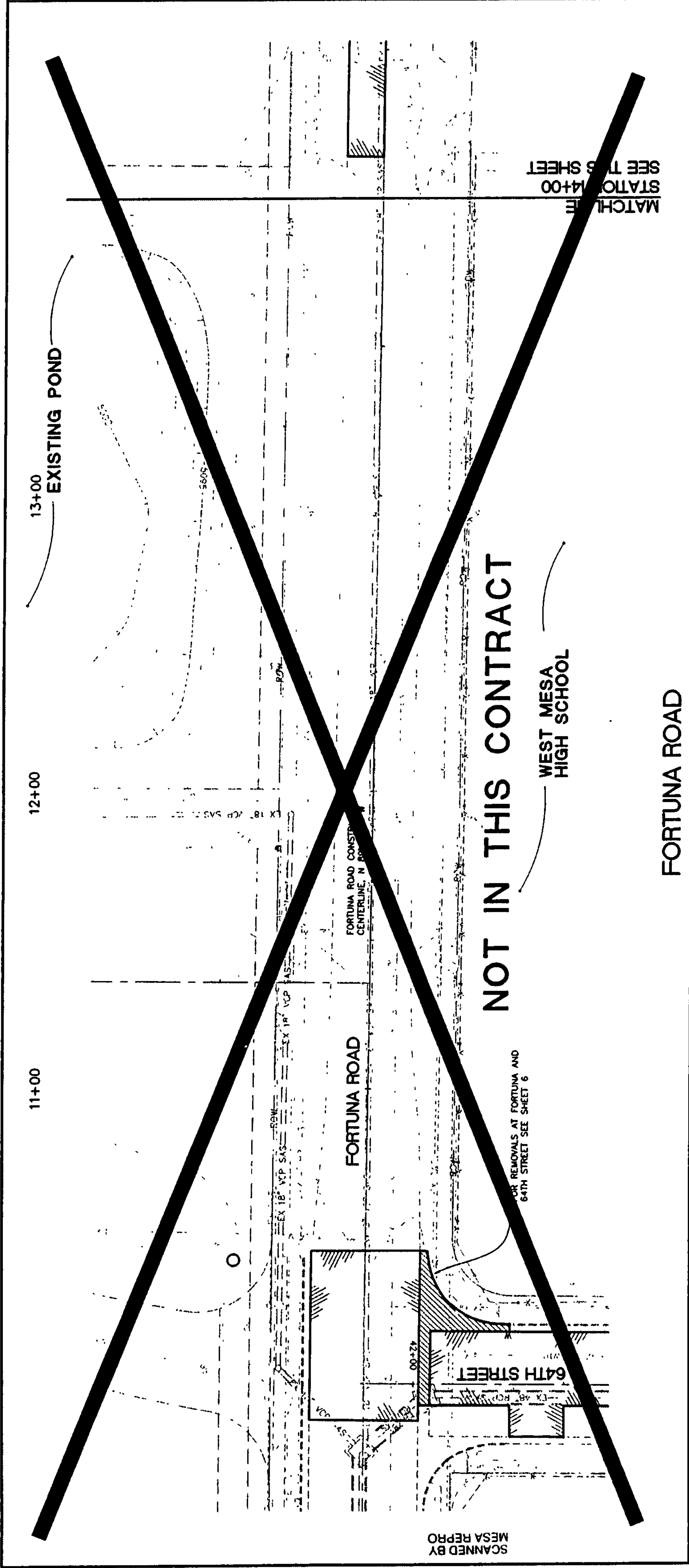
1. CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY.
2. ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.



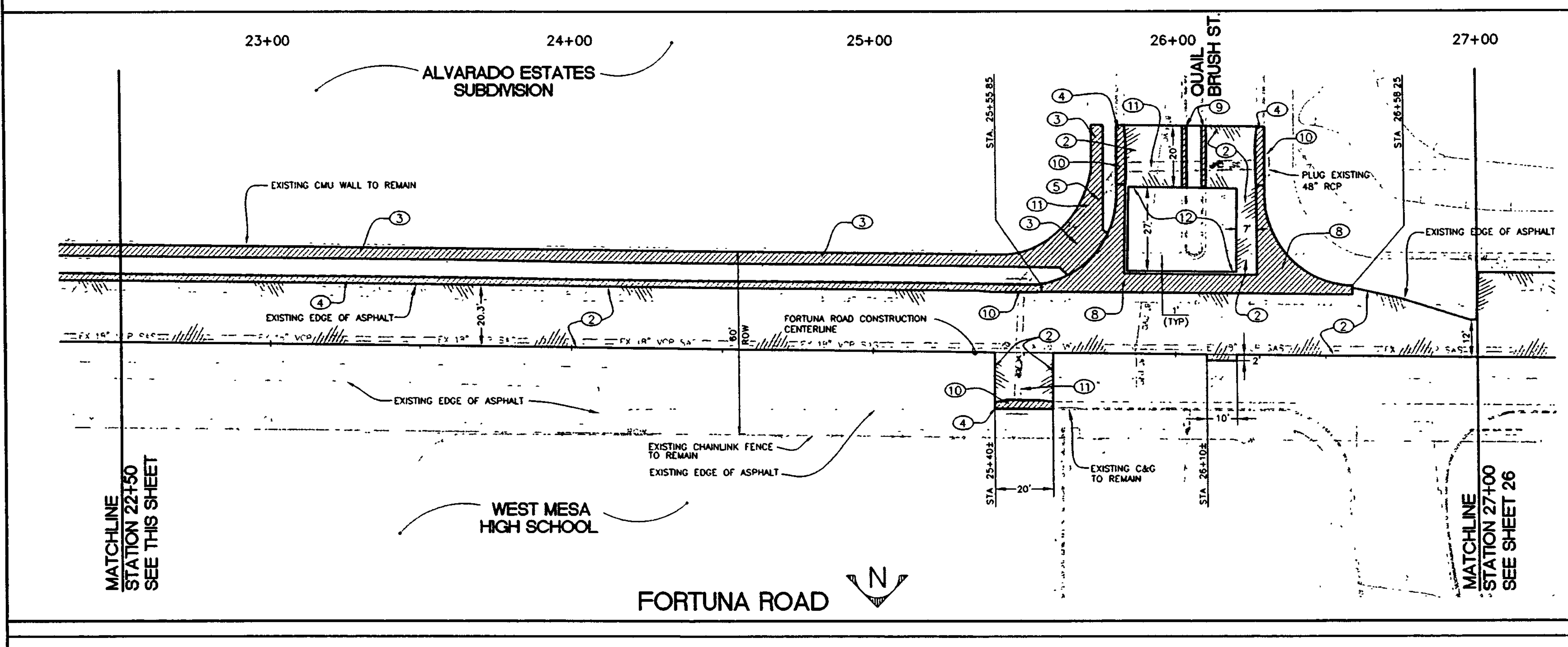
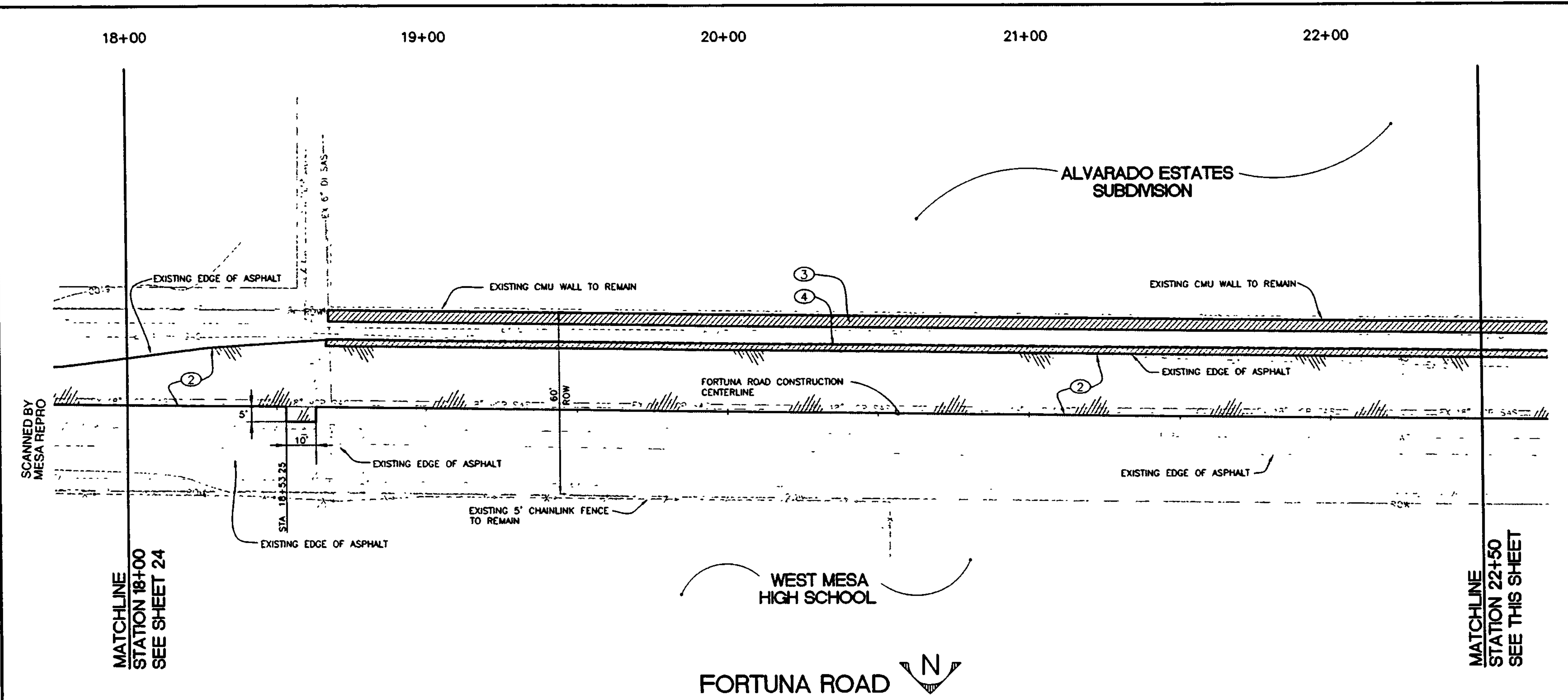
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP			
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D REMOVAL SHEET: LOS VOLCANES ROAD: STA. 28+00 TO 28+41.51			
Design Review Committee	City Engineer Approval	No. / Date / By	
City Project No.	Zone Map No.	Sheet	Of
538105	J-10	18	50

AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEERS SEAL	
CONTRACTOR: <u>Blue Key</u>		ELEV. 5103.98 FEET (34D 1929)		FIELD NOTES		NO. 1	
DATE: <u>06/04</u>		STATION: 3.5 MILES NW OF DOWNTOWN		DATE: <u>06/04</u>		BY: <u>DAVID S. ANDREWS</u>	
DRAWN BY: <u>Blue Key</u>		148 (COORS RD. NW) INTERCHANGE. STATION MARK IS A		NO.		REMARKS	
CHECKED BY: <u>Blue Key</u>		STANDARD NMHC BRASS TABLET, STAMPED		DATE: <u>06/04</u>		DESIGN	
RECORDED BY: <u>Blue Key</u>		"STA 1-40-18" SET IN TOP OF A CONCRETE POST FLUSH		DATE: <u>06/04</u>		DRAWN BY: <u>DLA</u>	
DATE: <u>06/04</u>		WITH THE GROUND. (N 1494559.08, E 384150.93)		DATE: <u>06/04</u>		CHECKED BY: <u>DLA</u>	
NO.						7-26-04	





KEYED NOTES: ① REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT PER THE PAVEMENT SECTION SHOWN ON SHEET 38 WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.		BID ALTERNATE NO. 2		GENERAL REMOVAL NOTES: 1. CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY. 2. ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.	
AS BUILT INFORMATION CONTRACTOR: <i>Smith Engineering</i> DATE: <i>6/16/04</i> RECORDED BY: <i>DATE</i> NO.		SURVEY INFORMATION FIELD NOTES NO. <i>1-22-04</i> BY <i>DATE</i>		ENGINEERS SEAL <i>Smith Engineering</i> 11771 EXPIRATION DATE: 12/31/04	
BENCH MARKS 1+40-18 NMHC/ACS ELEV. 5103.98 FEET (SLD 1828) STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN ALBUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD 448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A STANDARD NMHC BRASS TABLET, STAMPED "STA 1-40-18", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND. (N 149459.08, E 364150.93)		REVISIONS NO. <i>DATE</i> REMARKS BY <i>DATE</i>		DESIGN CHECKED BY: DLA DATE: 06/04 DRAWN BY: DLA DATE: 06/04	
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP		CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP		CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP	
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D		TITLE: WEST MESA DIVERSION PROJECT PHASE 2D		TITLE: WEST MESA DIVERSION PROJECT PHASE 2D	
REMOVAL SHEET: FORTUNA ROAD: STA. 13+00 TO 18+00		REMOVAL SHEET: FORTUNA ROAD: STA. 13+00 TO 18+00		REMOVAL SHEET: FORTUNA ROAD: STA. 13+00 TO 18+00	
Design Review Committee		City Engineer Approval		City Engineer Approval	
Zone Map No. J-10		Zone Map No. J-10		Zone Map No. J-10	
City Project No. 53805		City Project No. 53805		City Project No. 53805	
Sheet 24 of 50		Sheet 24 of 50		Sheet 24 of 50	



KEYED NOTES:

- 1 NOT USED
- 2 REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT PER THE PAVEMENT SECTION SHOWN ON SHEET 38 WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- 3 REMOVE AND DISPOSE EXISTING SIDEWALK TO LIMITS SHOWN. INSTALL NEW SIDEWALK (PER COA STD. DWG 2430) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES. REPLACE ALL WHEELCHAIR RAMPS PER COA STD. DWGS 2426, 2440 AND 2441 (WHICHEVER IS APPLICABLE).
- 4 REMOVE AND DISPOSE EXISTING STANDARD CURB AND GUTTER TO LIMITS SHOWN. INSTALL NEW STANDARD CURB AND GUTTER (PER COA STD. DWG 2415A) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- 5 NOT USED
- 6 NOT USED
- 7 NOT USED
- 8 REMOVE AND DISPOSE EXISTING CONCRETE VALLEY GUTTER AND FILLET TO LIMITS SHOWN. INSTALL NEW CONCRETE VALLEY GUTTER AND FILLET (COA STD. DWG 2420) WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- 9 REMOVE AND DISPOSE EXISTING MEDIAN CURB AND GUTTER TO LIMITS SHOWN. INSTALL NEW MEDIAN CURB AND GUTTER (PER COA STD. DWG 2415B) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- 10 REMOVE AND DISPOSE EXISTING STORM DRAIN INLET
- 11 REMOVE AND DISPOSE EXISTING STORM DRAIN LINE
- 12 AREA OF ASPHALT NOT TO BE REMOVED.

GENERAL REMOVAL NOTES:

- 1. CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY
- 2. ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

20' 10' 0 20' 40'

SCALE: 1" = 20'

Smith Engineering Company
196105D
A Public Service Engineering Company
4000 Central Avenue, N.E. Suite 100, Albuquerque, New Mexico 87110

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D
REMOVAL SHEET: FORTUNA ROAD: STA. 18+00 TO 27+00

Design Review Committee	City Engineer Approval	NO. / BY / DATE	NO. / BY / DATE
Last Design Update			

City Project No.	Zone Map No.	Sheet	Of
538105	J-10	25	50

AS BUILT INFORMATION

CONTRACTOR	SCALE	DATE

BENCH MARKS

MARK	CONTRACTOR	SCALE	DATE

SURVEY INFORMATION

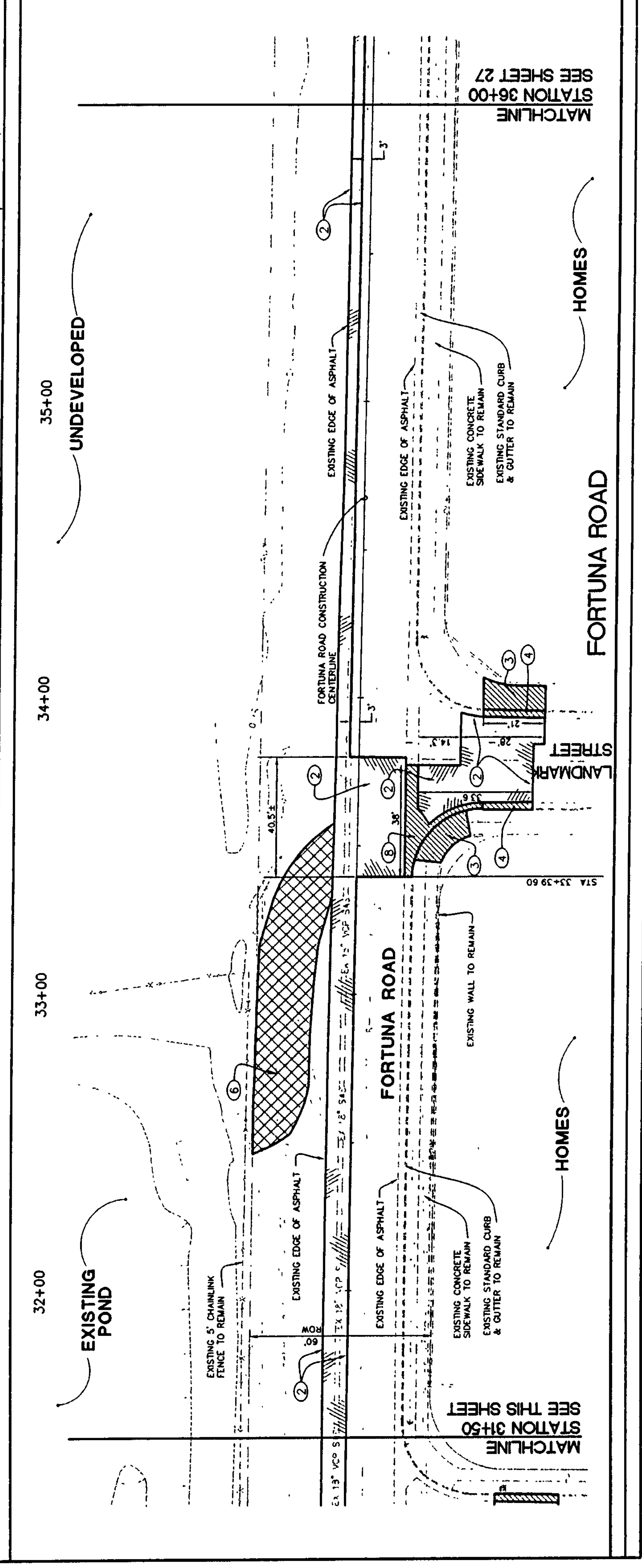
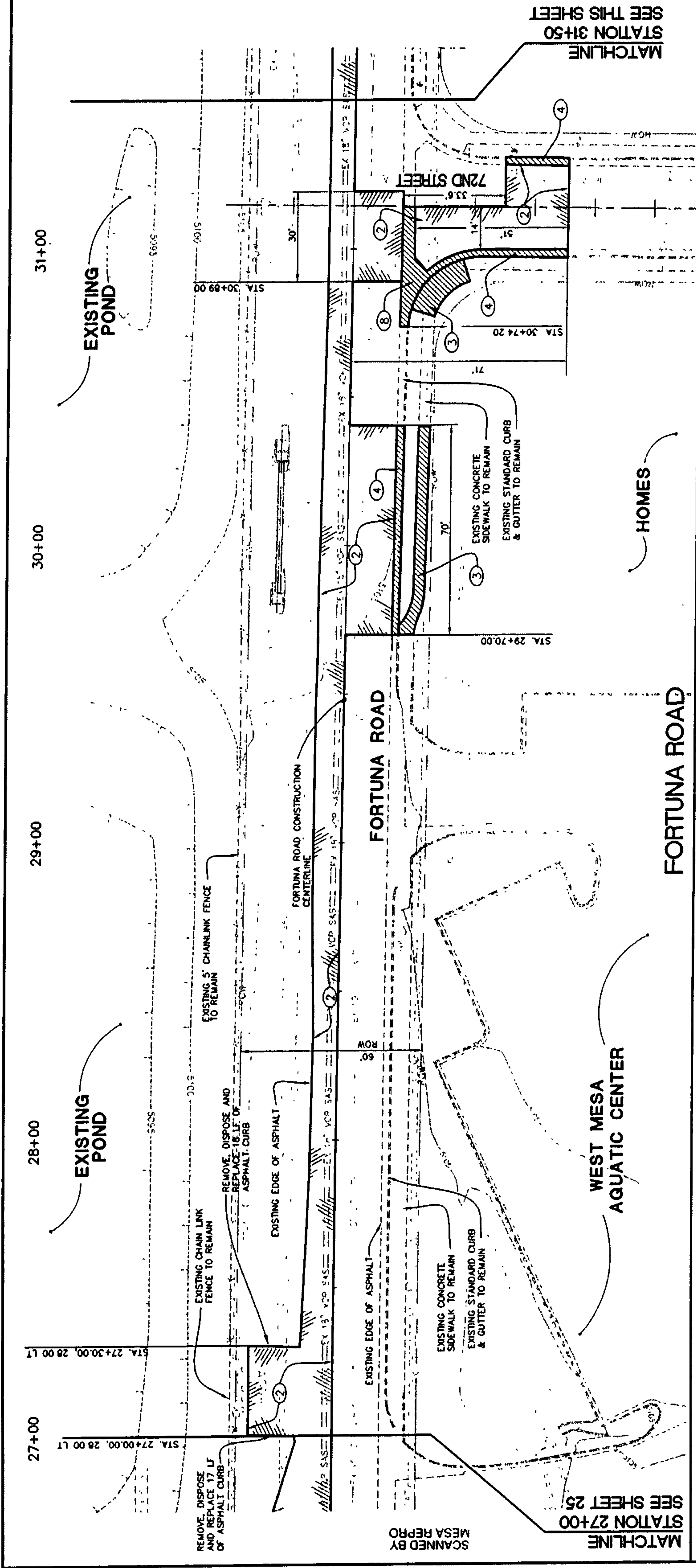
FIELD NOTES	DATE

ENGINEER'S SEAL

David J. Andrews
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
11771
7-26-04

NO.	DATE	REMARKS	DESIGN

DESIGNED BY	DATE	08/04
DRAWN BY	DATE	08/04
CHECKED BY	DATE	08/04



**BID ALTERNATE
NO. 2**

GENERAL REMOVAL NOTES:

1. CONTRACTOR SHALL PERFORM ALL REMOVAL WORK WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY
2. ANY DAMAGE TO ITEMS ON PRIVATE PROPERTY DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

KEYED NOTES:

- ① NOT USED
- ② REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT PER THE PAVEMENT SECTION SHOWN ON SHEET 38 WHEN CONSTRUCTION IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- ③ REMOVE AND DISPOSE EXISTING SIDEWALK TO LIMITS SHOWN. INSTALL NEW SIDEWALK PER COA STD. DWG 2430. WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE, CONTRACTOR TO MATCH EXISTING GRADES. REPLACE ALL WHEELCHAIR RAMPS PER COA STD. DWGS 2428, 2440 AND 2441 (WHICHEVER IS APPLICABLE)
- ④ REMOVE AND DISPOSE EXISTING STANDARD CURB AND GUTTER TO LIMITS SHOWN. INSTALL NEW STANDARD CURB AND GUTTER (PER STD. DWG 2430) WHEN TRENCHING AND BACKFILLING IN THE AREA IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.
- ⑤ NOT USED
- ⑥ REMOVE AND DISPOSE OF EXISTING ASPHALT RUNDOWN TO LIMITS OF RIGHT OF WAY.
- ⑦ NOT USED
- ⑧ REMOVE AND DISPOSE EXISTING CONCRETE VALLEY GUTTER AND FILLET TO LIMITS SHOWN. INSTALL NEW CONCRETE VALLEY GUTTER AND FILLET (COA STD. DWG 2420) WHEN TRENCHING AND BACKFILLING IS COMPLETE. CONTRACTOR TO MATCH EXISTING GRADES.

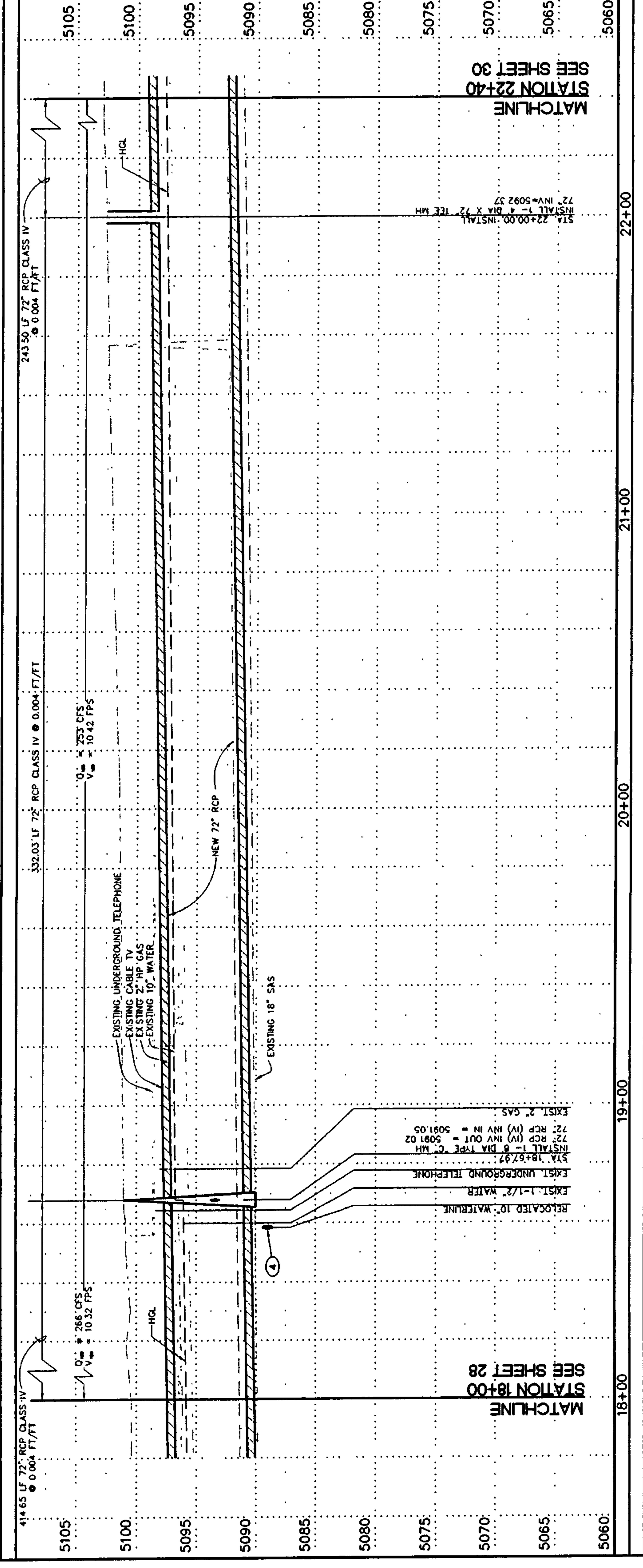
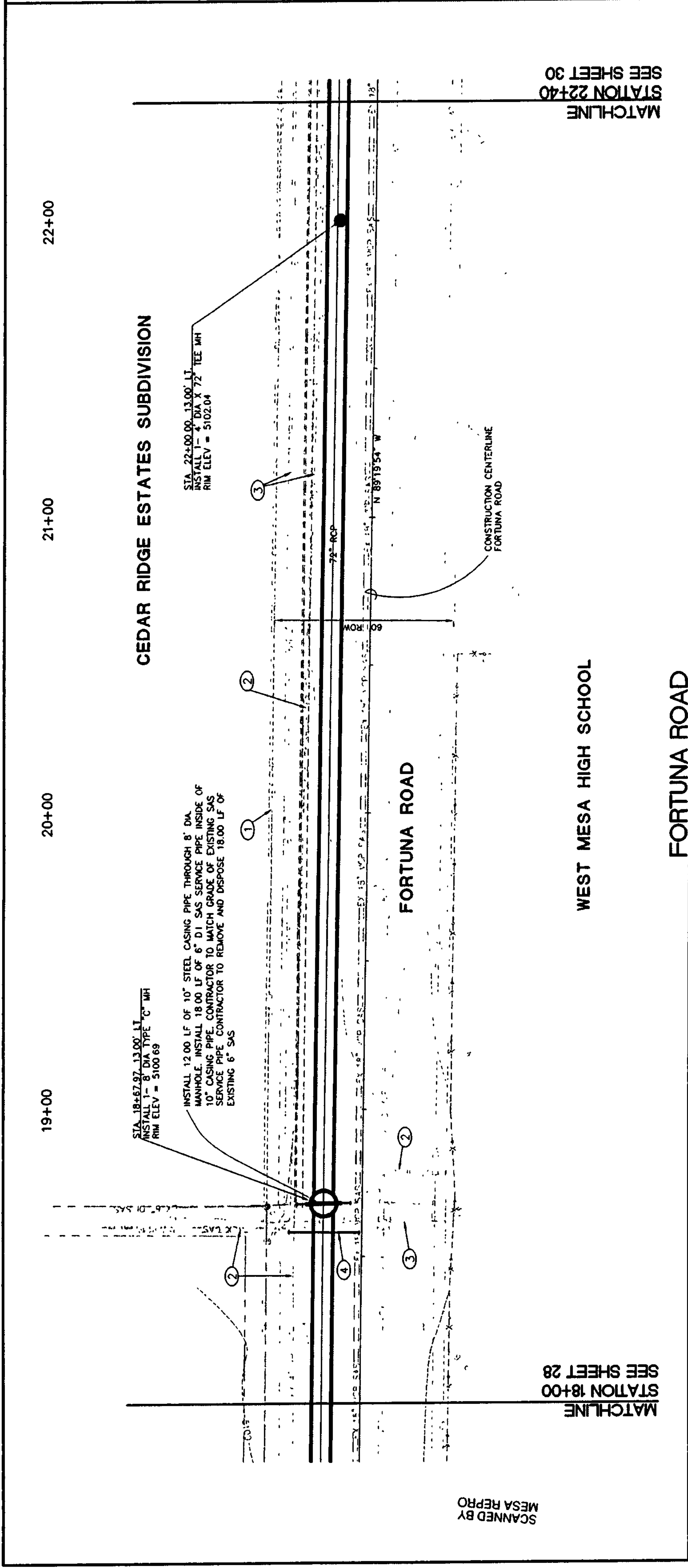
DESIGNED BY	DLA	DATE	06/04
DRAWN BY	DLA.LL	DATE	06/04
CHECKED BY	DLA	DATE	06/04
DESIGN			
REVISIONS			
NO.	DATE	REMARKS	BY
ENGINEER'S SEAL			

40-22-L



Boyle

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP		TITLE: WEST MESA DIVERSION PROJECT PHASE 2D		DATE: 11/14/12		BY: J. B. / J. B.	
REMOVAL SHEET: FORTUNA ROAD: STA. 27+00 TO 36+00		City Engineer Approval		Last Design Update			
Design Review Committee		City Engineer Approval		Last Design Update		Sheet	
						26 of 50	
City Project No.		538705		Zone Map No.		J-10	



○ KEYED NOTES:

① PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PHM-ELECTRIC (RICK MONTVOYA (505) 241-3403) **NOTE PHM-ELECTRIC REQUIRED 4 WEEKS TO SCHEDULE CRANE TO PERFORM ANY WORK.**

② PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PHM-GAS (JEFF ROMANOWSKI (505) 241-1453) **NOTE PHM-GAS REQUIRED 4 WEEKS TO SCHEDULE CRANE TO PERFORM ANY WORK.**

③ PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PHM-STEEL (MARK AMY (505) 241-1587) **NOTE PHM-STEEL REQUIRED 4 WEEKS TO SCHEDULE CRANE TO PERFORM ANY WORK.**

④ EXISTING 10" W/ SEE SHEET 42 FOR RELOCATION INFORMATION. TUBES REMAIN ALL THE JOINTS LOWERED. THE STEELING IS TO BE

GENERAL NOTES

1. ALL CONSTRUCTION MUST TAKE PLACE WITHIN CITY OF ALBUQUERQUE RIGHT OF WAY. THE CONTRACTOR SHALL USE SHORING, TRENCH BOXES, ETC. DURING ALL TRENCHING AND BACKFILLING WORKS. SO AS NOT TO DAMAGE ANY EXISTING UTILITIES, SIDEWALKS, WALLS, PAVEMENT, ETC. THAT EXIST ON PRIVATE PROPERTY. ANY DAMAGE TO ITEMS LOCATED ON PRIVATE PROPERTY WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE AT NO ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR SHALL NOT USE LARGE/HEAVY VIBRATORY COMPACTION MACHINES/DEVICES BELOW THE TOP LINE OF THE EXISTING 18" VCP SANITARY SEWER PIPE IN FORTUNA RD.
3. ALL WATERLINE FITTINGS INSTALLED THAT CONNECT TO EXISTING WATERLINES SHALL UTILIZE PORTLAND CEMENT CONCRETE BLOCKING PER CAO STD DWG 2320
4. NO SEPARATE PAYMENT WILL BE MADE FOR TRENCHING AND BACK FILLING OF 6" WORK AT STA. 18+647.97 THIS WORK IS CONSIDERED INCIDENTAL TO THE PROJECT.
5. HANDLING OF SEWAGE RELATIVE TO THE SAS PIPE WORK AT STA. 18+647.97 WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL

**BID ALTERNATE
NO. 2**

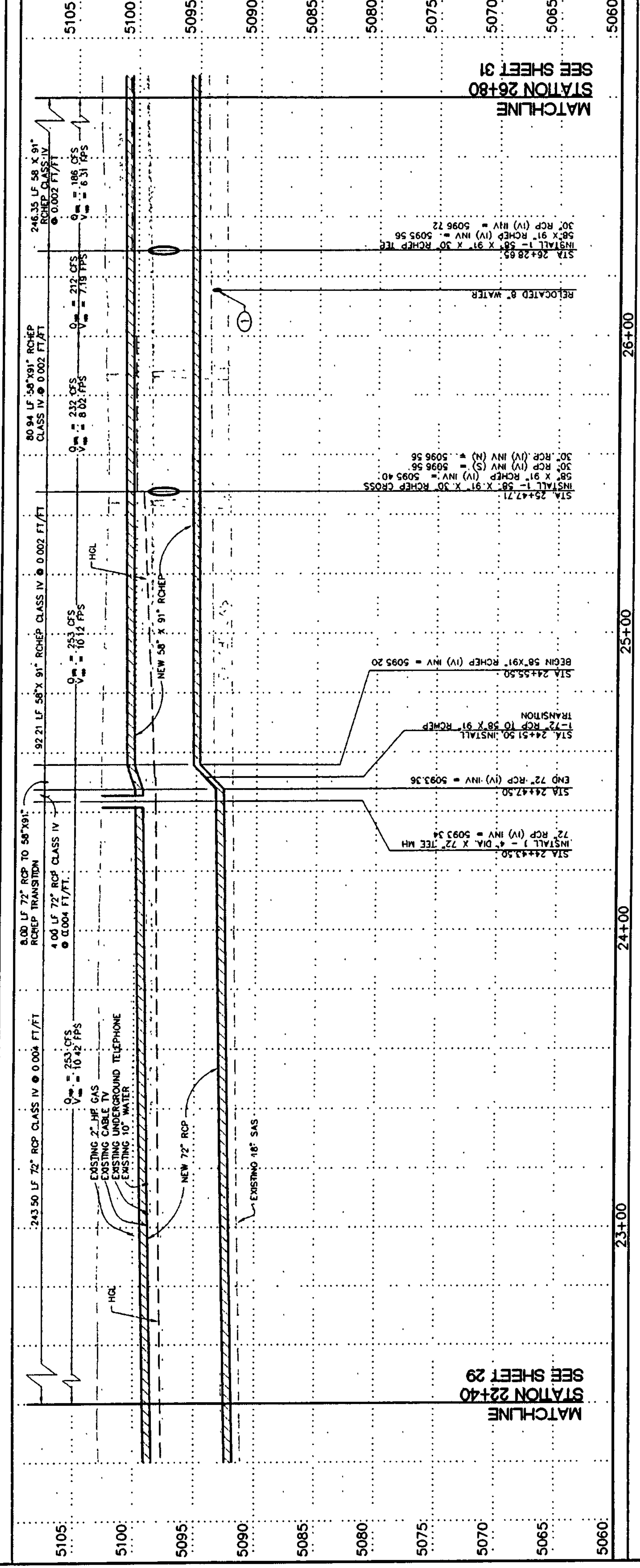
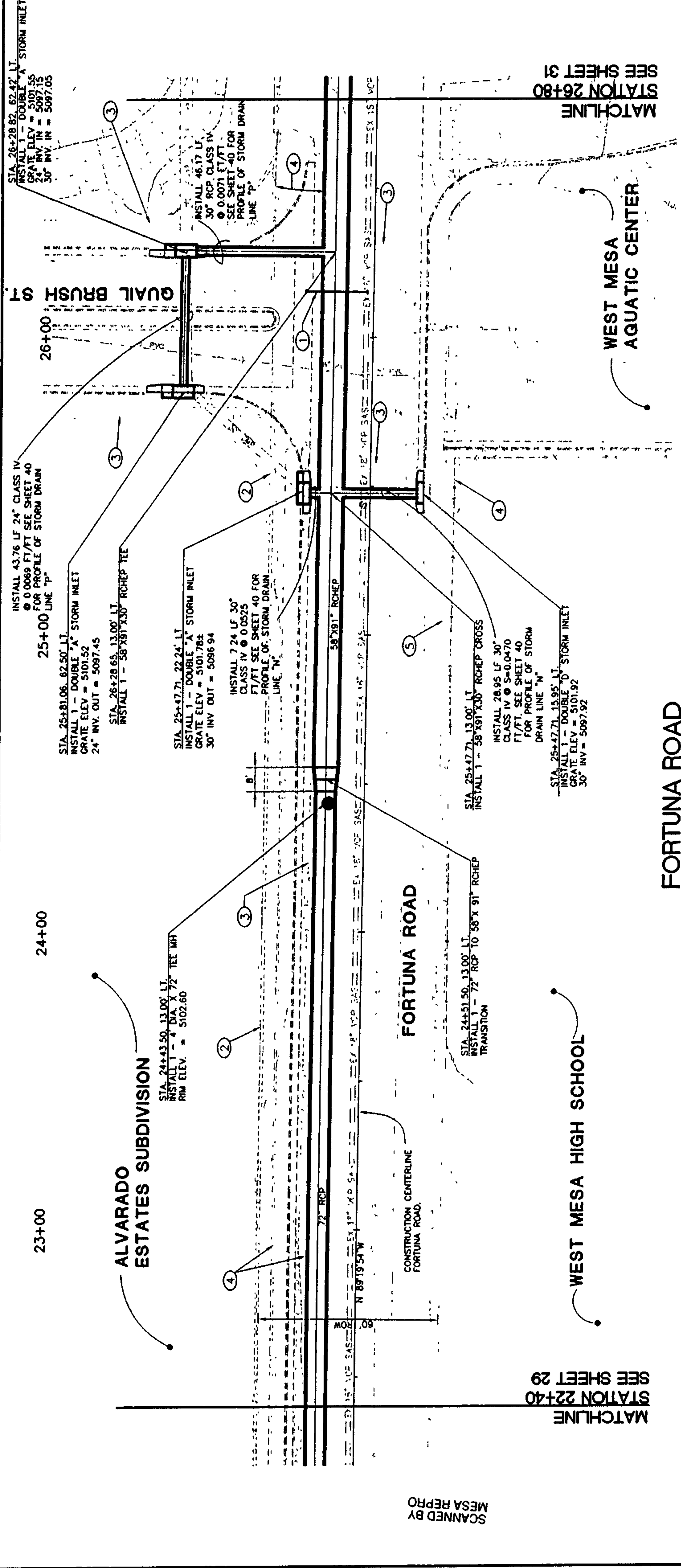
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Horizontal Scale 1" = 20'

Vertical Scale 1" = 5'

DESIGNED BY	PLA	DATE	06/04		NO. _____ BY _____ DATE _____	FIELD NOTES CONTACT INFORMATION	CONTRACTOR SUE S. FLORES	NO. _____ BY _____ DATE _____	STA 1+40-18 NMSHC/ACS ELEV 5103.90 FEET (SLD 1928) STANDARD NMSHC BRASS TABLET, STAMPED WITH THE GROUND, (N 1494859.08, E 364150.93) MICRO-FILM INFORMATION	NO. _____ RECORDED BY _____ DATE _____
DESIGNED BY	PLA	DATE	06/04							
DRAWN BY	PLA	DATE	06/04							
CHECKED BY	PLA	DATE	06/04							
REVISIONS	REMARKS	NO.	DATE							

[illegible]



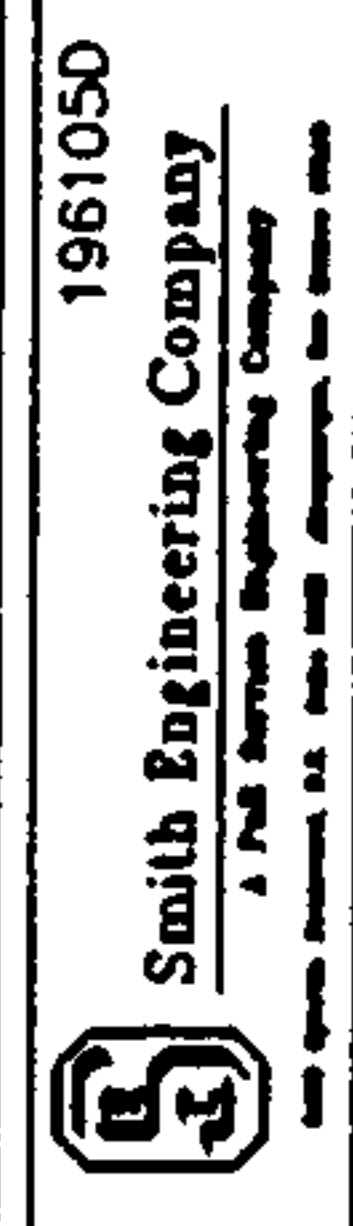
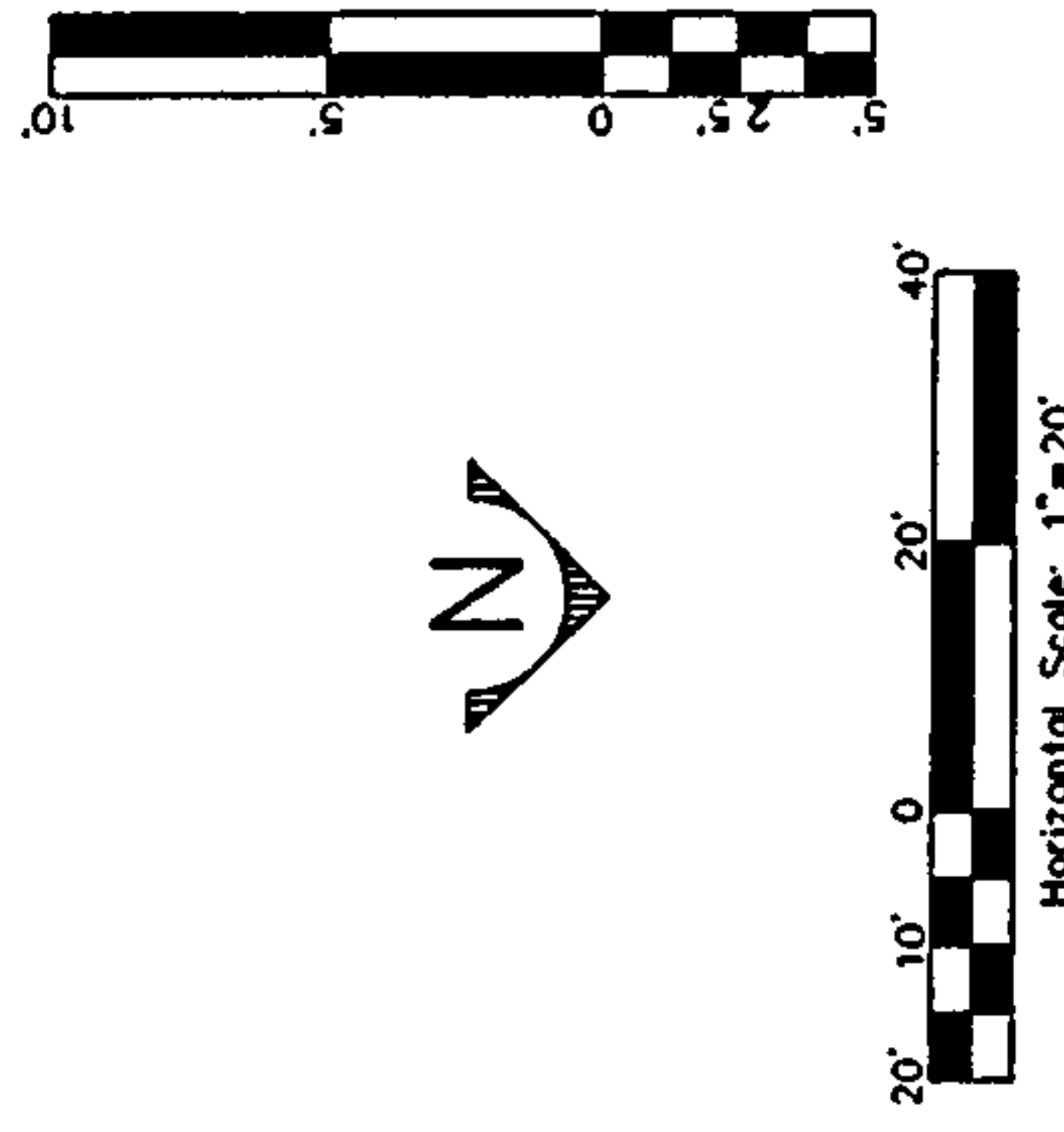
**BID ALTERNATE
NO. 2**

KEYED NOTES:

- ① EXISTING 8" WATERLINE. SEE SHEET 42 FOR RELOCATION INFORMATION.
- ② PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PMA-ELECTRIC (RICK MONTOYA (505) 241-3403). **NOTES: PMA-ELECTRIC REQUIRES A WEEKS TO SCHEDULE CREW TO PERFORM ANY WORK.**
- ③ PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PMA-GAS (JEFF ROMANOWSKI (505) 241-7753). **NOTES: PMA-GAS REQUIRES A WEEKS TO SCHEDULE CREW TO PERFORM ANY WORK.**
- ④ PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH ONEST (MARY ANN JOLLA (505) 245-6587). **NOTES: ONEST REQUIRES A WEEKS TO SCHEDULE CREW TO PERFORM ANY WORK.**
- ⑤ PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH COMCAST (JOHN SAFETY 761-6261). **NOTES: COMCAST REQUIRES A WEEKS TO SCHEDULE CREW TO PERFORM ANY WORK.**

GENERAL NOTES

- ALL CONSTRUCTION MUST TAKE PLACE WITHIN CITY ALBUQUERQUE RIGHT OF WAY. THE CONTRACTOR SHALL USE SHORING, TRENCH BOXES, ETC. DURING THE TRENCHING AND BACKFILLING PROCESS SO AS TO PROTECT EXISTING UTILITIES, TRAVEL LANE, SIDEWALKS, PAVEMENT, ETC. THAT EXIST ON PRIVATE PROPERTY. ANY DAMAGE TO ITEMS LOCATED ON PRIVATE PROPERTY WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE AT NO ADDITIONAL COST TO THE OWNER.
- EXTERNAL MC WRAP (OR APPROVED EQUIVALENT) SHALL BE INSTALLED AT ALL ELLIPTICAL PIPE JOINTS.
- THE CONTRACTOR SHALL NOT USE LARGE/HEAVY TRANSMITTER/COMPACTOR MACHINES/DEVICES BELOW THE DRAINAGE LINE OF THE PROPOSED STORM DRAIN PIPE DURING THE AGE OF THE EXISTING 18" VCP SANITARY SEWER PIPE IN FORTUNA RD.
- ALL WATER LINE FITTINGS INSTALLED THAT CONNECT TO EXISTING MC SHALL UTILIZE PCC BLOCKING FOR COSTA UNIFORM 2340.

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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

NAME WEST MESA DIVERSION PROJECT PHASE 2D
FORM DRAIN P&P: FORTUNA ROAD: STA 22+40 TO 26+80

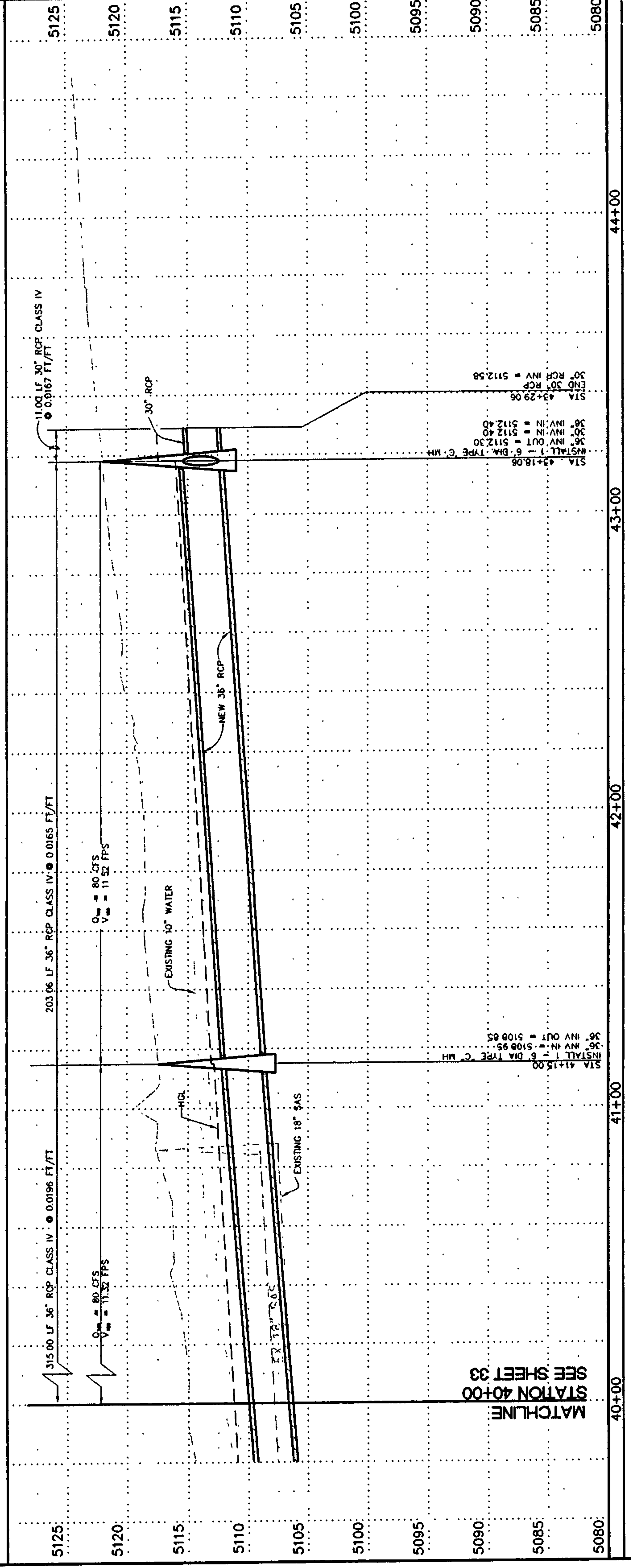
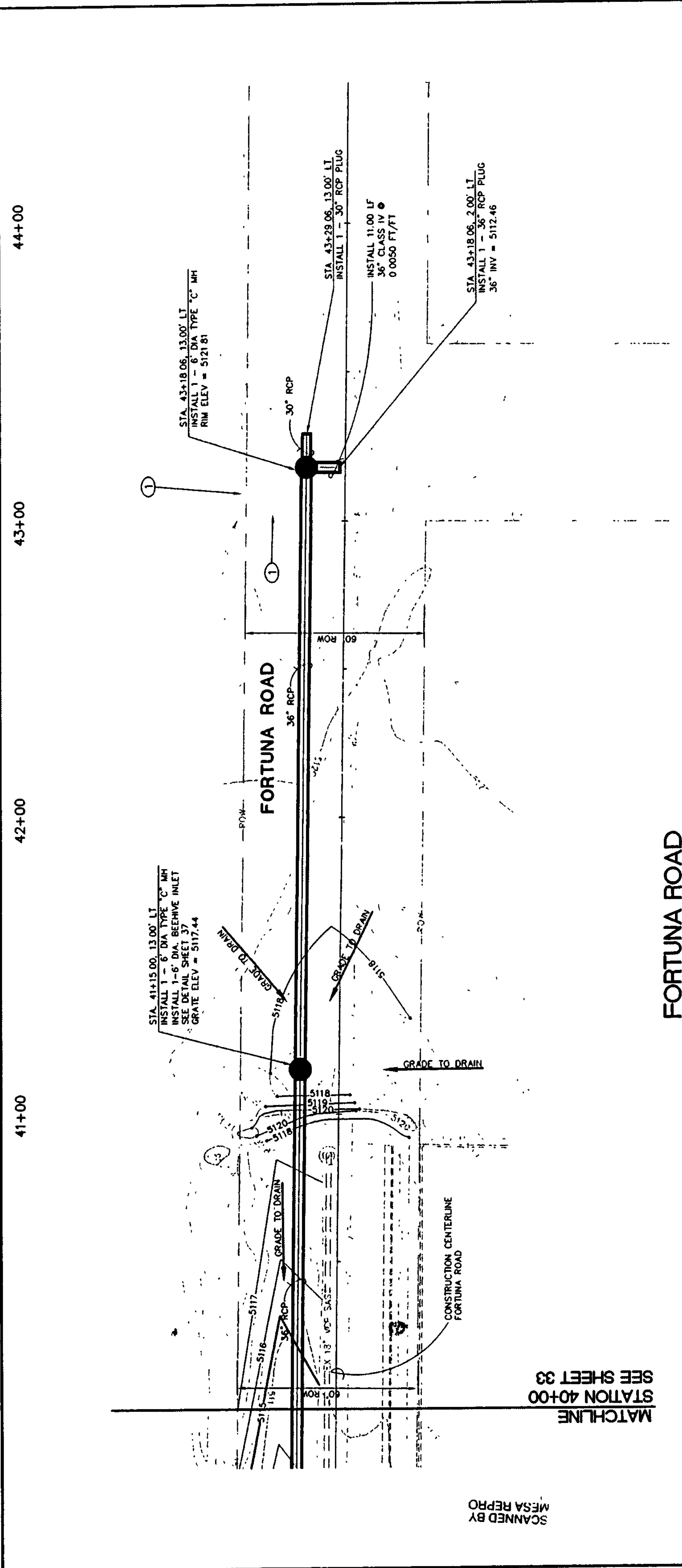
City Engineer Approval

City Project No.

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[illegible]



AS BUILT INFORMATION

CONTRACTOR *Smith Brothers*

DATE *8/25/05*

AS BUILT INFORMATION

RECORDED BY *Blue Sky*

DATE *8/25/05*

AS BUILT INFORMATION

RECORDED BY *Blue Sky*

DATE *8/25/05*

AS BUILT INFORMATION

RECORDED BY *Blue Sky*

DATE *8/25/05*

NO.

DATE

REMARKS

DESIGNED BY DLA

DATE 08/04

DRAWN BY DLA

DATE 08/04

CHECKED BY DLA

DATE 08/04

ENGINEERS SEAL

7-26-04

FIELD NOTES

NO.

DATE

BENCH MARKS

STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN ALBUQUERQUE, AT THE INTERCHANGE. STATION MARK IS A STANDARD NMHC BRASS TABLET, STAMPED STA 1-40-18, SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND. (N 1494859 08, E 384150.93)

SURVEY INFORMATION

NO.

DATE

GENERAL NOTES

1. ALL CONSTRUCTION MUST TAKE PLACE WITHIN CITY LIMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND RIGHTS-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRENCHING AND BACKFILLING PROCESS SO AS NOT TO DAMAGE ANY FACILITIES, UTILITIES, FENCES, WALLS, PAVEMENT, ETC. THAT EXIST ON PRIVATE PROPERTY. ANY DAMAGE TO ITEMS LOCATED ON PRIVATE PROPERTY WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE AT NO ADDITIONAL COST TO THE OWNER.

2. THE CONTRACTOR SHALL NOT USE LARGE/HEAVY VIBRATORY COMPACTION MACHINES/DEVICES BELOW SPRING LINE OF THE PROPOSED STORM DRAIN PIPE DUE TO THE RISK OF THE EXISTING 18" VCP SANITARY SEWER PIPE IN FORTUNA RD.

3. ALL WATERLINE FITTINGS INSTALLED THAT CONNECT TO EXISTING WATERLINES SHALL UTILIZE PCC BLOCKING PER CDA STD DWG NO. 2320.

4. ALL GRADING SHOWN ON THIS SHEET WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THE GRADING SHOWN ON THIS SHEET.

BID ALTERNATE NO. 2

Vertical Scale: 1" = 5'

Horizontal Scale: 1" = 20'

Smith Engineering Company
1961050
A Public Works Engineering Company
with offices located at: New Mexico, Albuquerque, New Mexico

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE WEST MESA DIVERSION PROJECT PHASE 2D

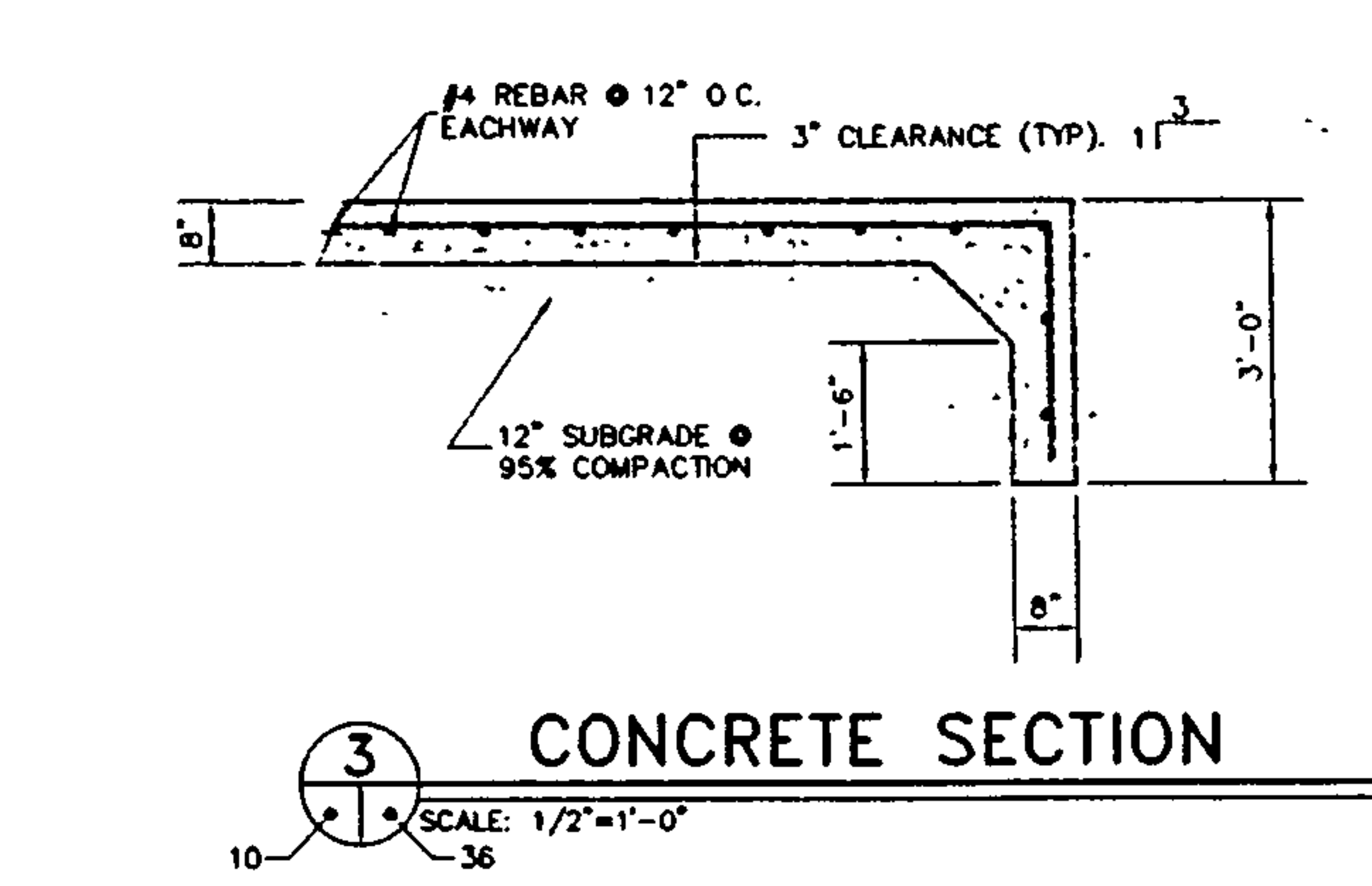
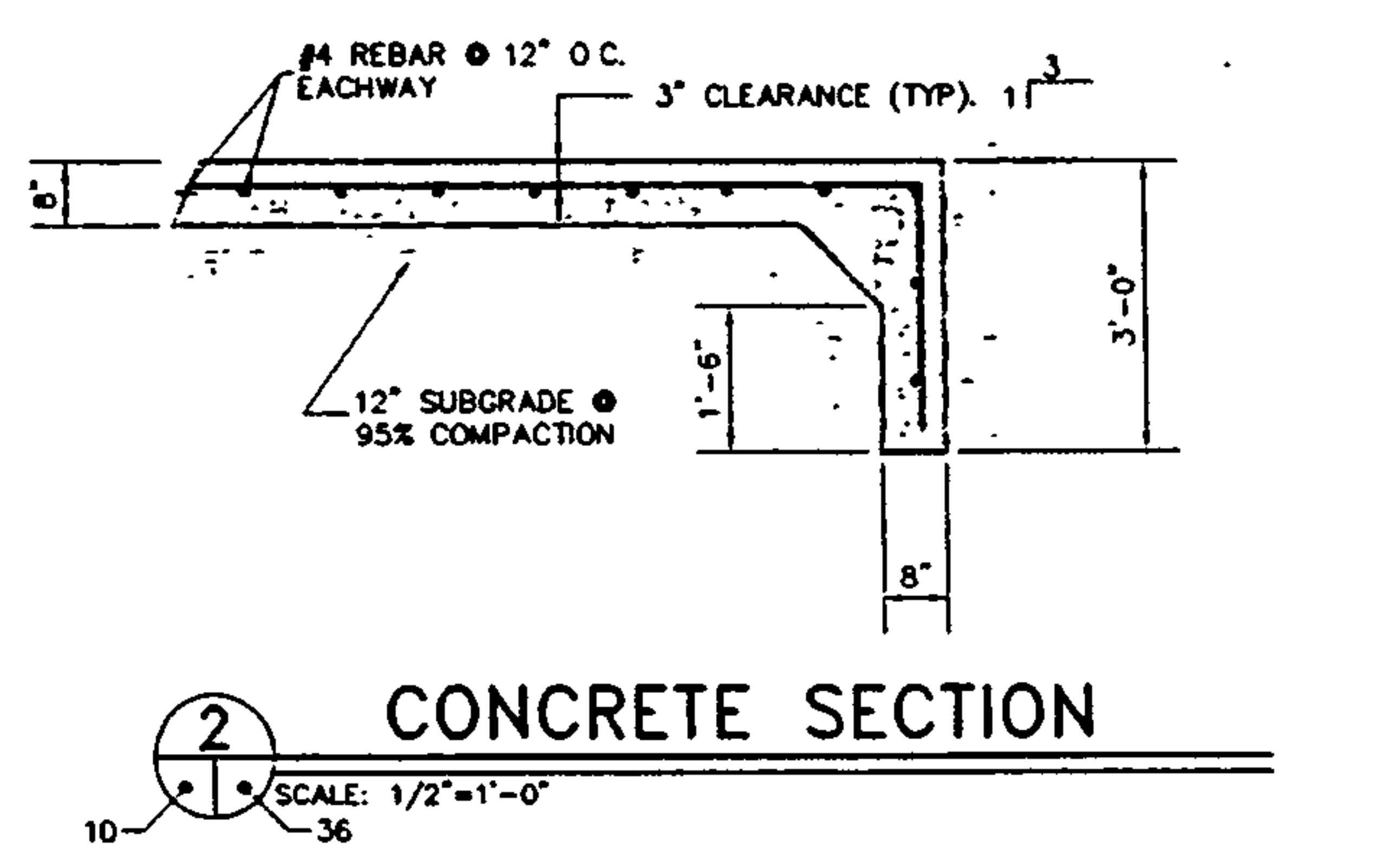
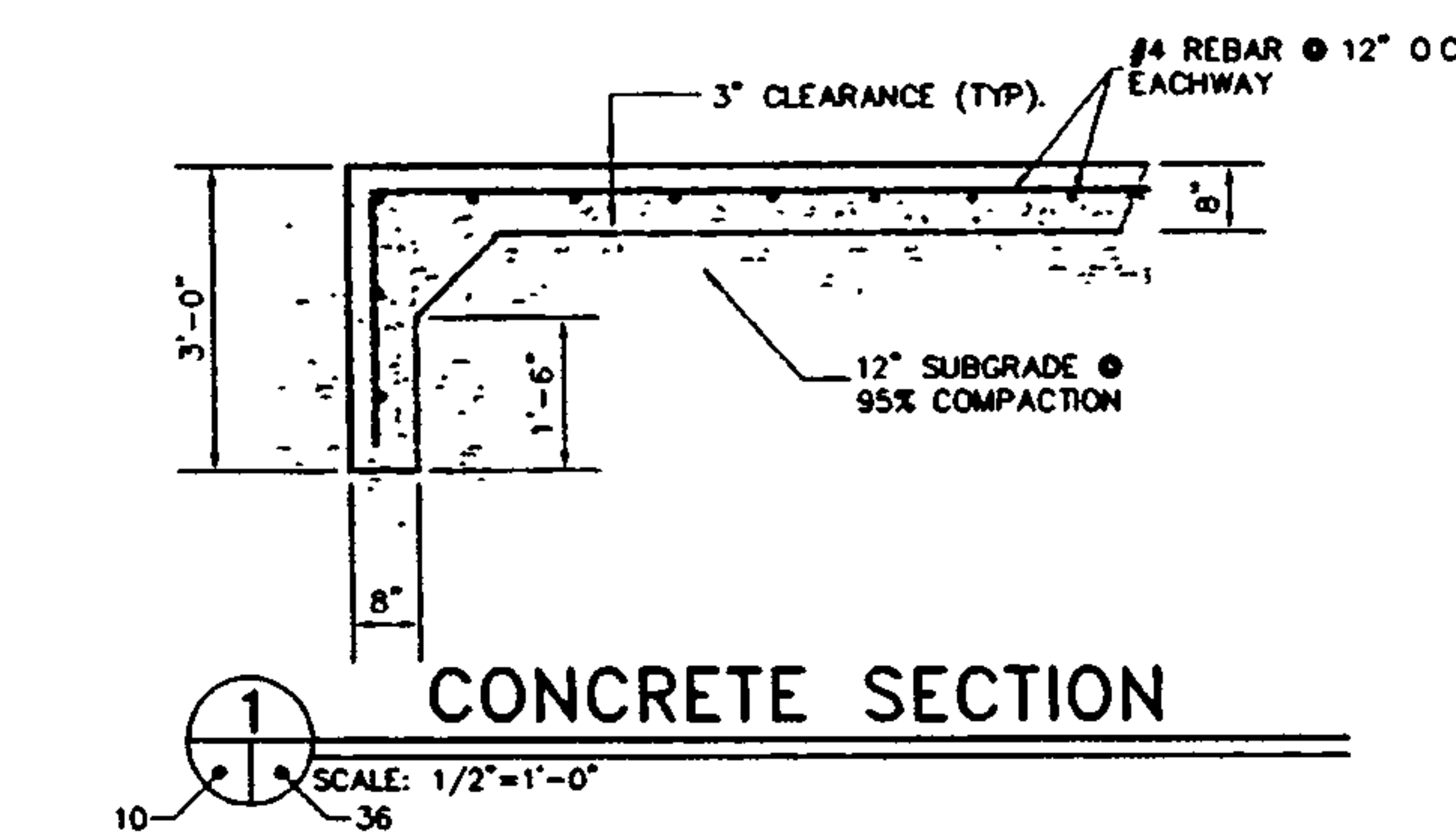
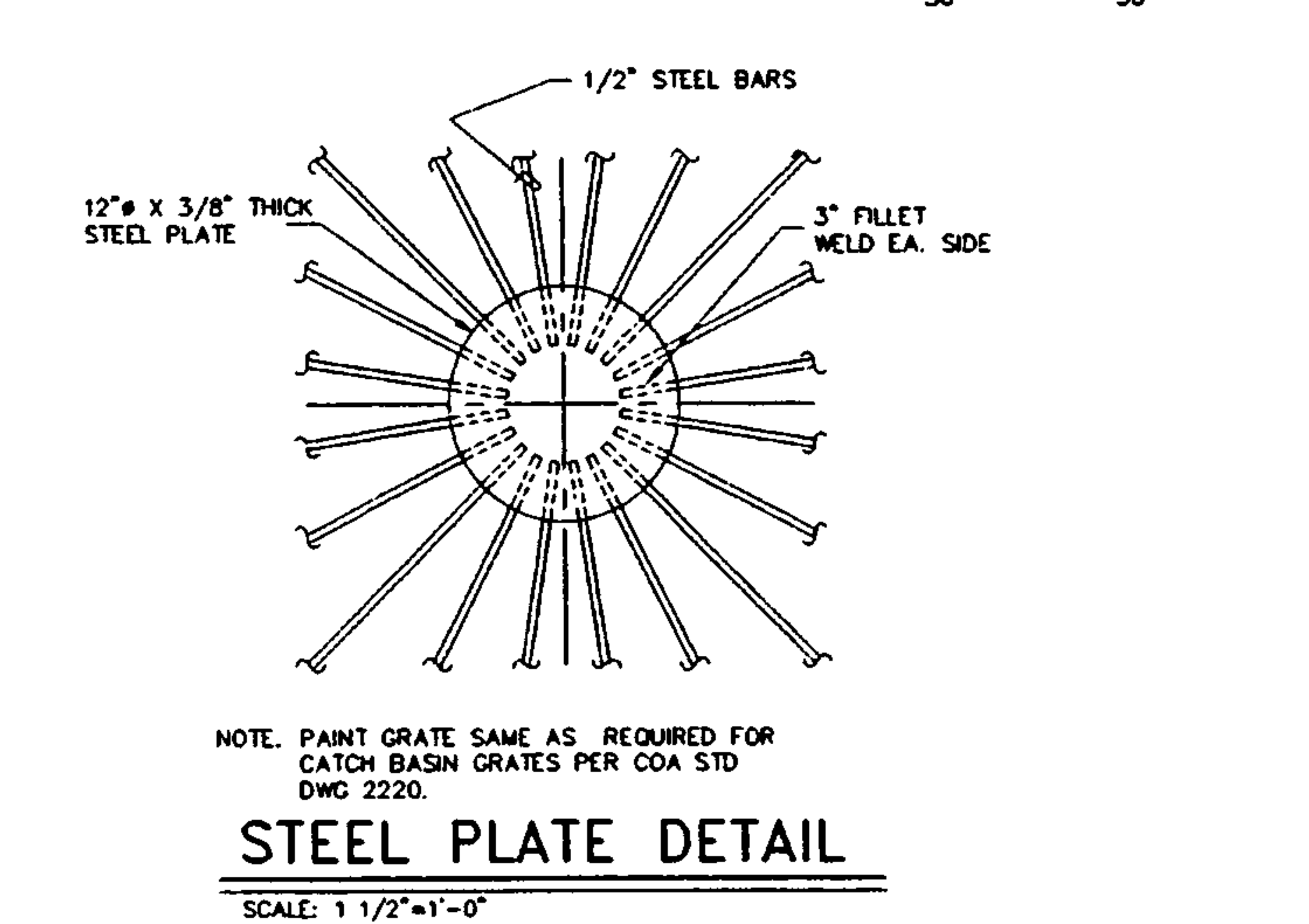
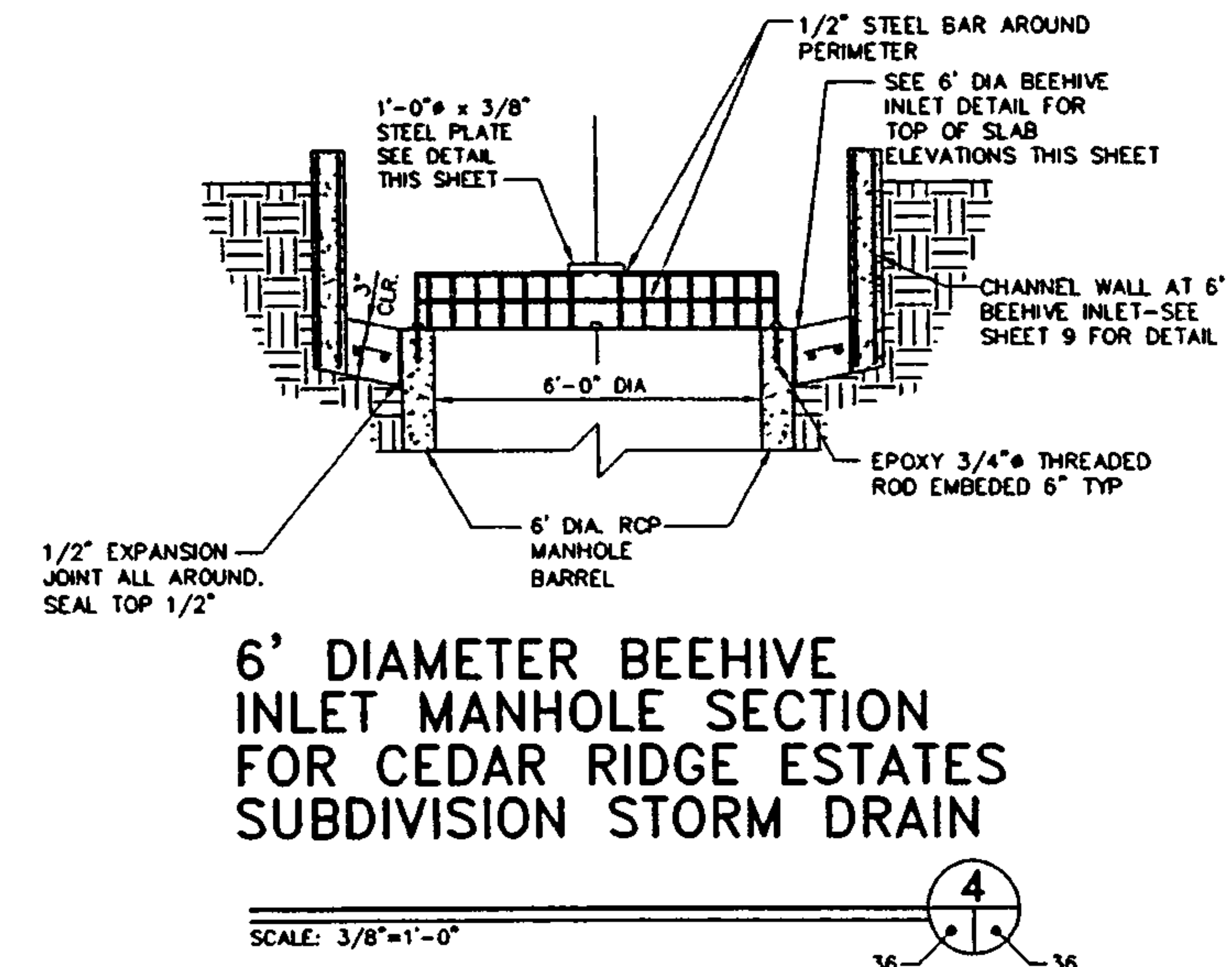
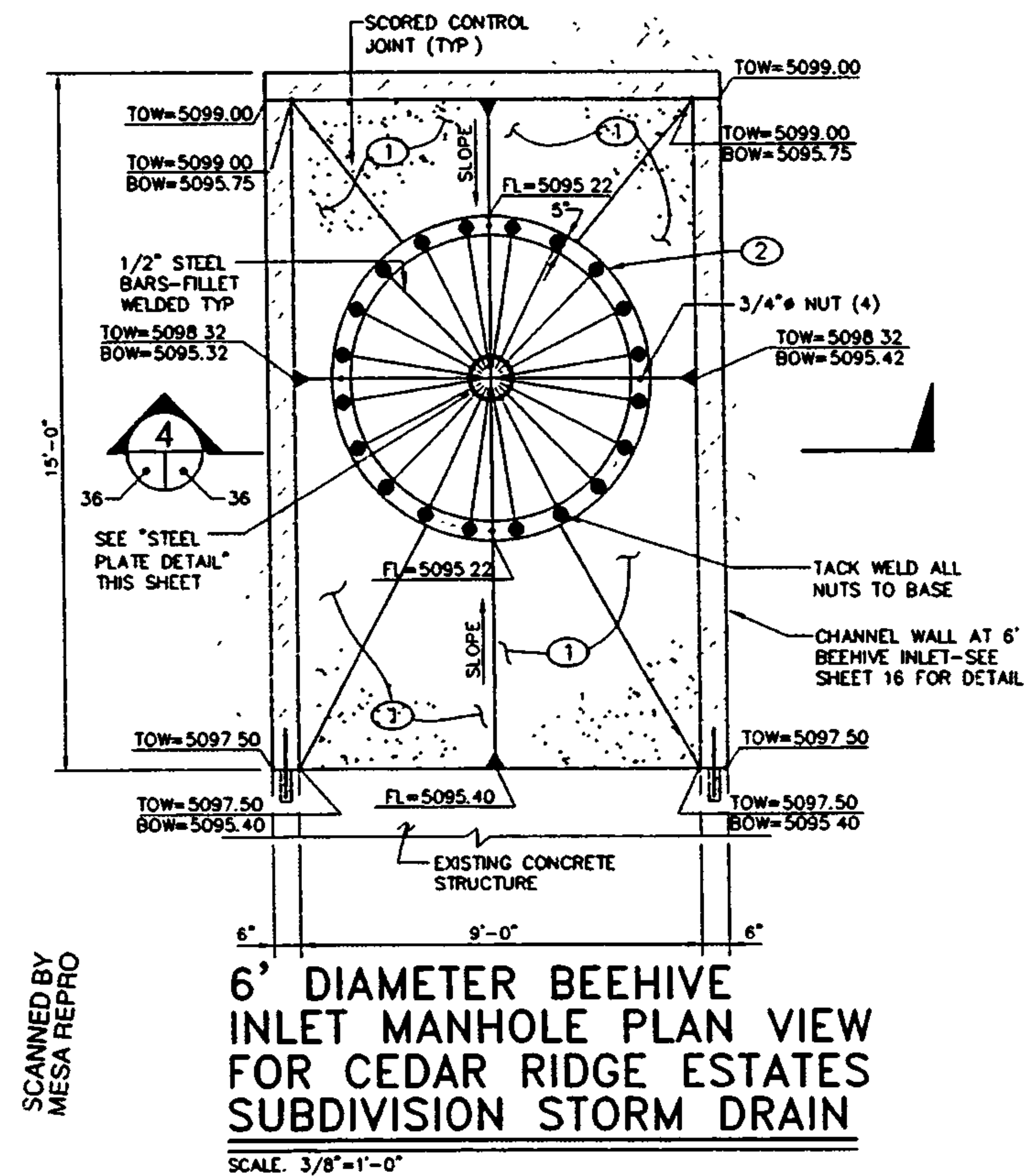
STORM DRAIN P&P: FORTUNA ROAD: STA 40+00 TO 42+29.06

Design Review Committee City Engineer Approval

City Project No. 53805

Zone Map No. J-10

Sheet 34 of 50



KEYED NOTES:

- 6" CONCRETE WITH #4 @ 12" O.C. EACH WAY
- 1/2" THICK, 5" WIDE STEEL BASE PLATE WITH 10# ID OF RISER.

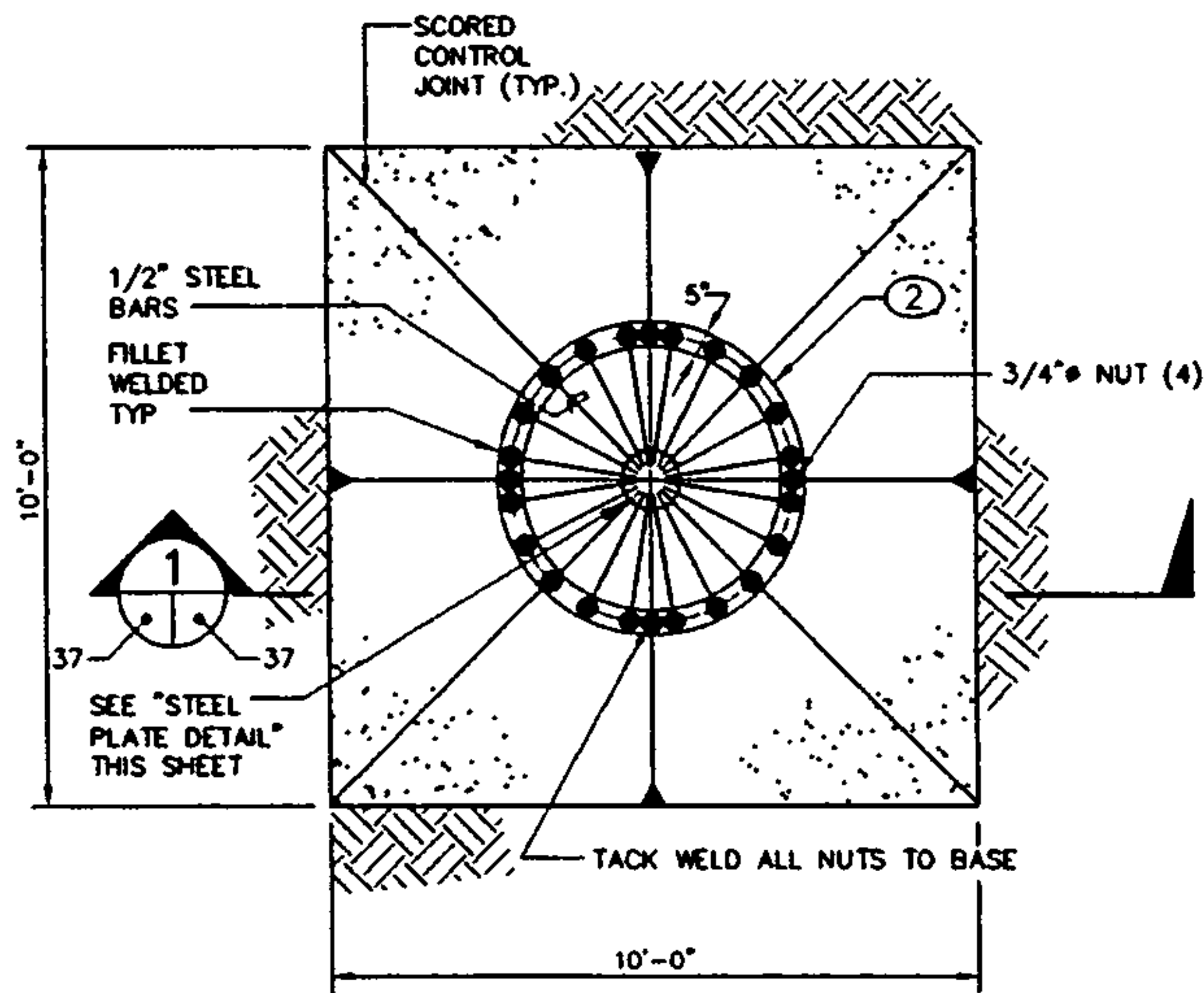
LEGEND

TOW = TOP OF WALL
BOW = BOTTOM OF WALL
FL = FLOW LINE ELEVATION

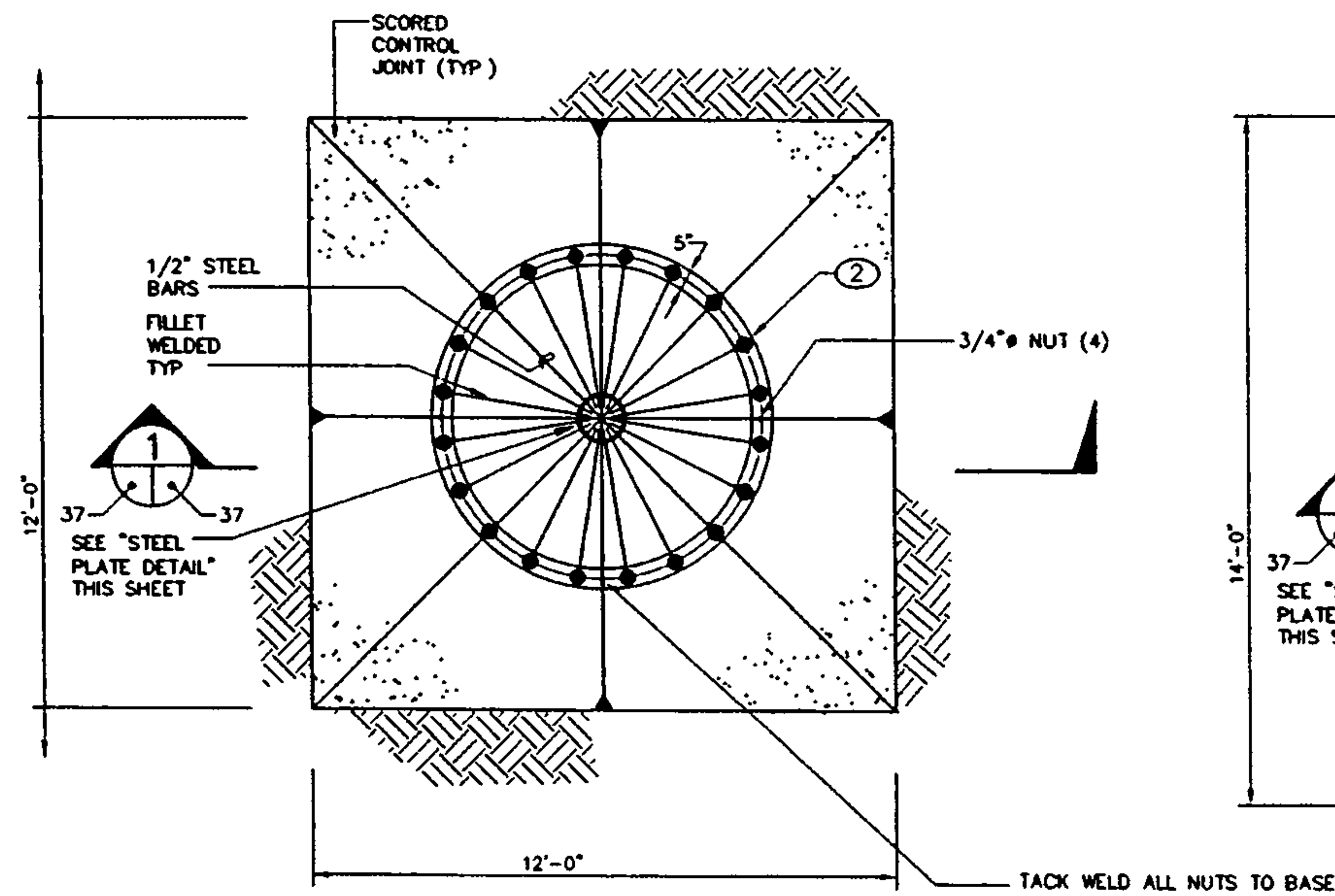
BASE BID

		196105D	
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP			
TITLE WEST MESA DIVERSION PROJECT PHASE 2D DETAIL SHEET			
Design Review Committee	City Engineer Approval	NO.	DATE
		REVISIONS	DESIGN
DESIGNED BY DLA	DATE 06/04	CHECKED BY DLA	DATE 06/04
DRAWN BY DLA	DATE 06/04		
CITY PROJECT NO. 538105	ZONE MAP NO. J-10	SHEET 36	OF 50

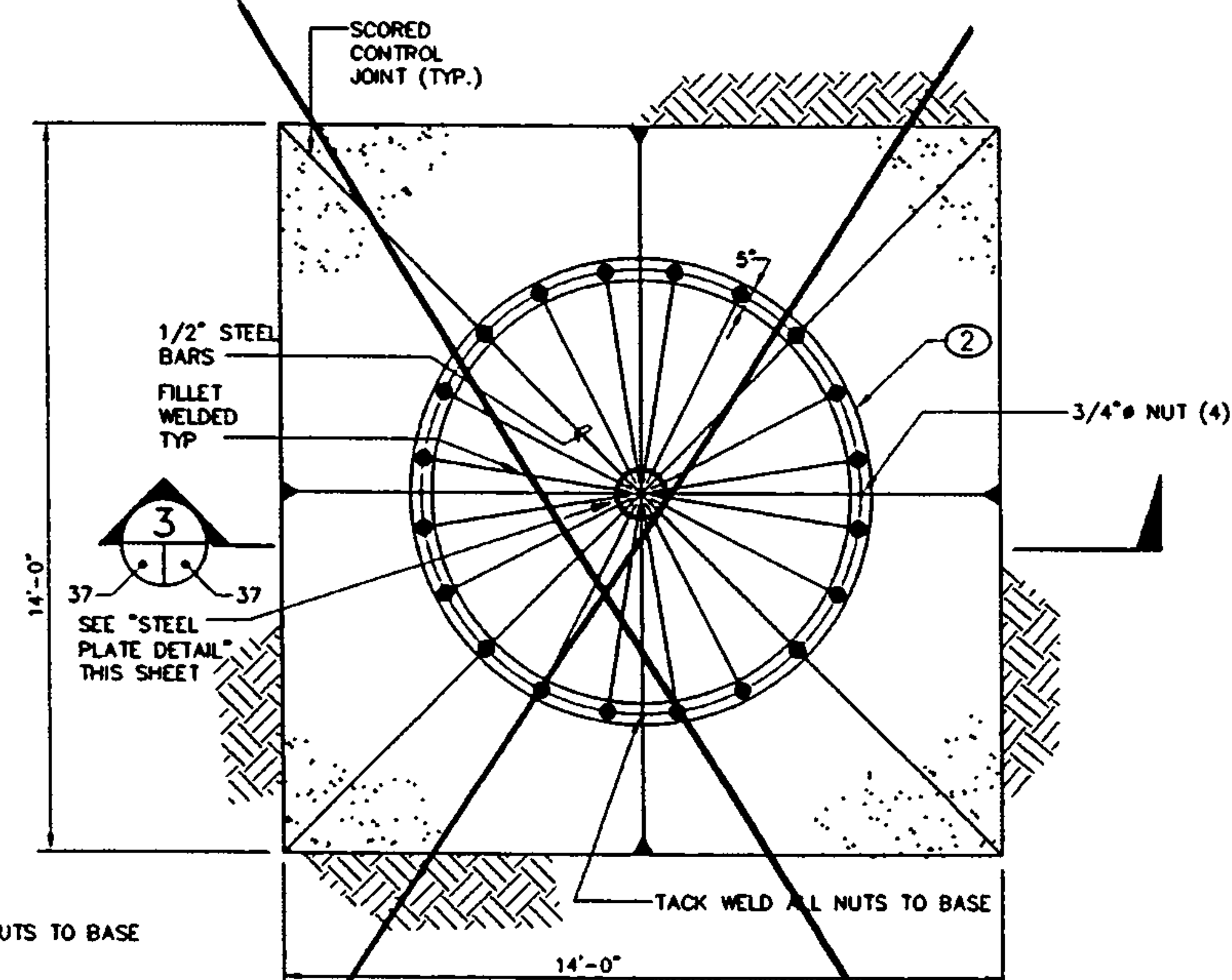
AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION	
CONTRACTOR	DATE	NO.	BY	NO.	DATE
SAE BROWNS	06/05				
STATION	DATE				
1-40-18 NWSHC/ACS ELEV. 5103.98 FEET (SLD 1928)	06/05				
STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN	06/05				
ALBUQUERQUE, AT THE HIGHWAY I-40 AND STATE ROAD	06/05				
448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A	06/05				
STANDARD NWSHC BRASS TABLET, STAMPED	06/05				
"STA 1-40-18" SET IN TOP OF A CONCRETE POST FLUSH	06/05				
WITH THE GROUND. (N 1494859.08, E 364150.93)	06/05				
MICRO-FILM INFORMATION		RECORDED BY		NO.	



4' DIAMETER BEEHIVE INLET PLAN VIEW
SCALE: 3/8"=1'-0"

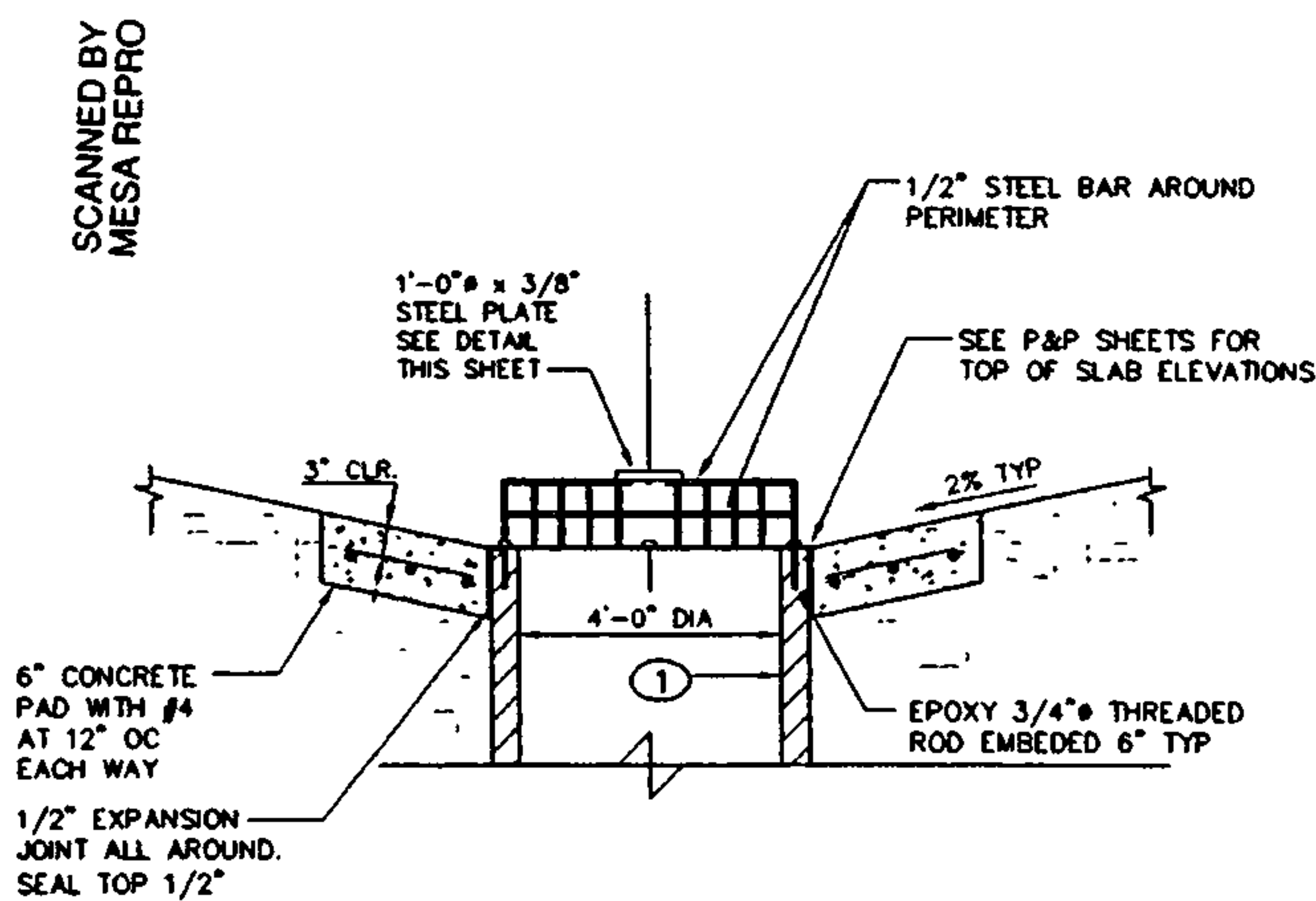


6' DIAMETER BEEHIVE INLET MANHOLE PLAN VIEW
SCALE: 3/8"=1'-0"

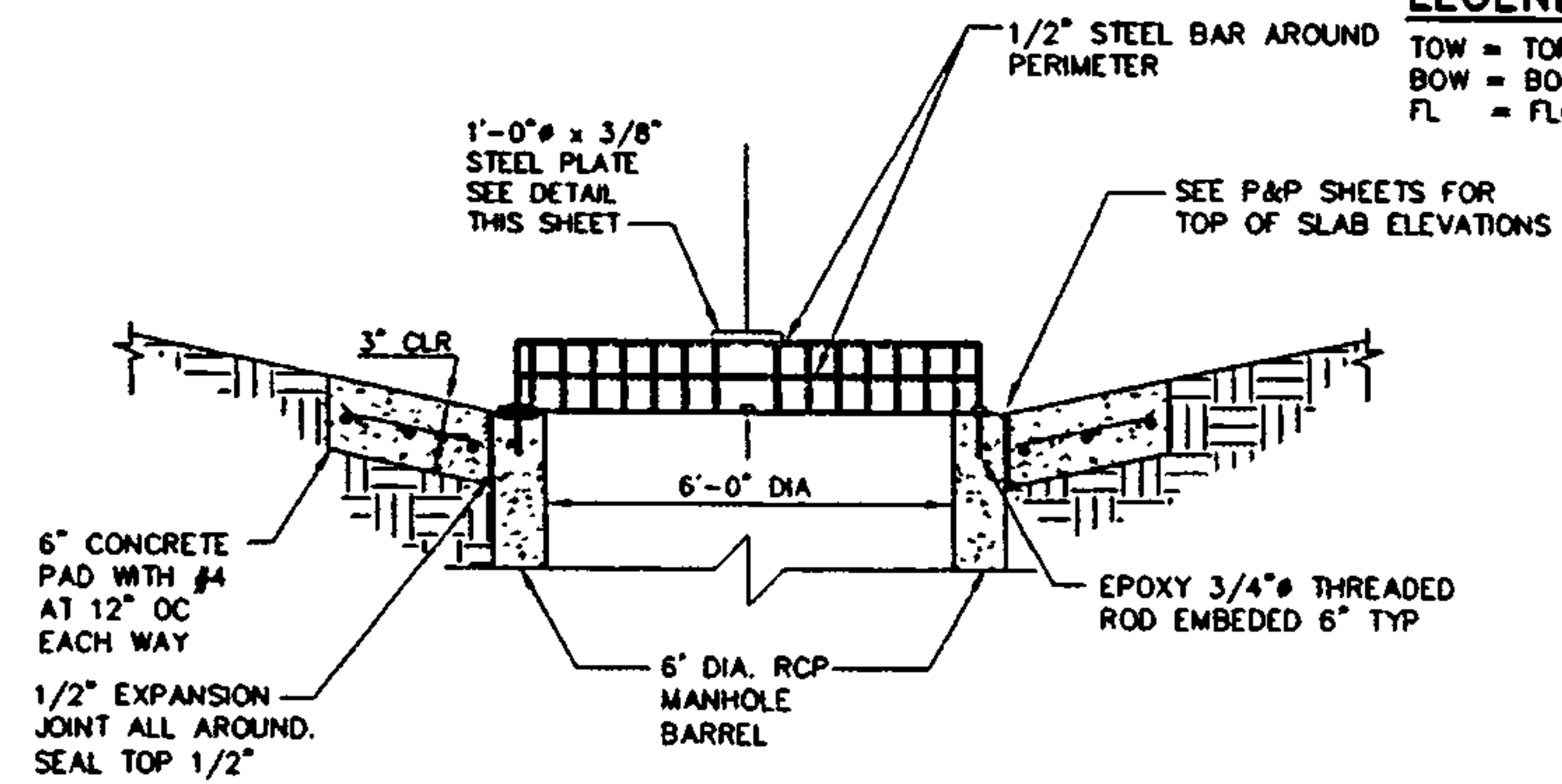


8' DIAMETER BEEHIVE INLET PLAN VIEW
SCALE: 3/8"=1'-0"

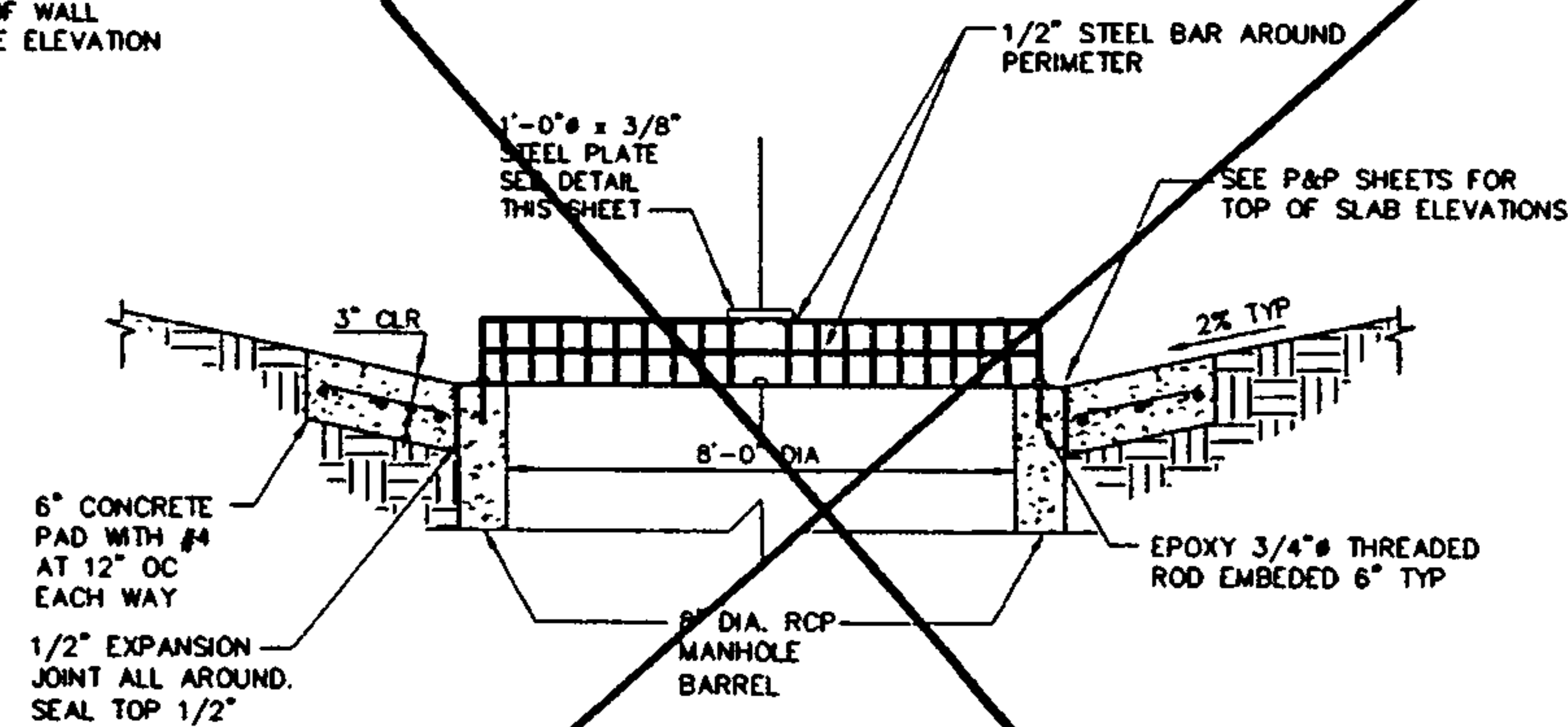
- KEYED NOTES:**
- 4' DIA. MANHOLE RISERS AS REQUIRED
 - 1/2" THICK, 5" WIDE STEEL BASE PLATE WITH ID=ID OF RISER.



4' DIAMETER BEEHIVE INLET SECTION
SCALE: 3/8"=1'-0"

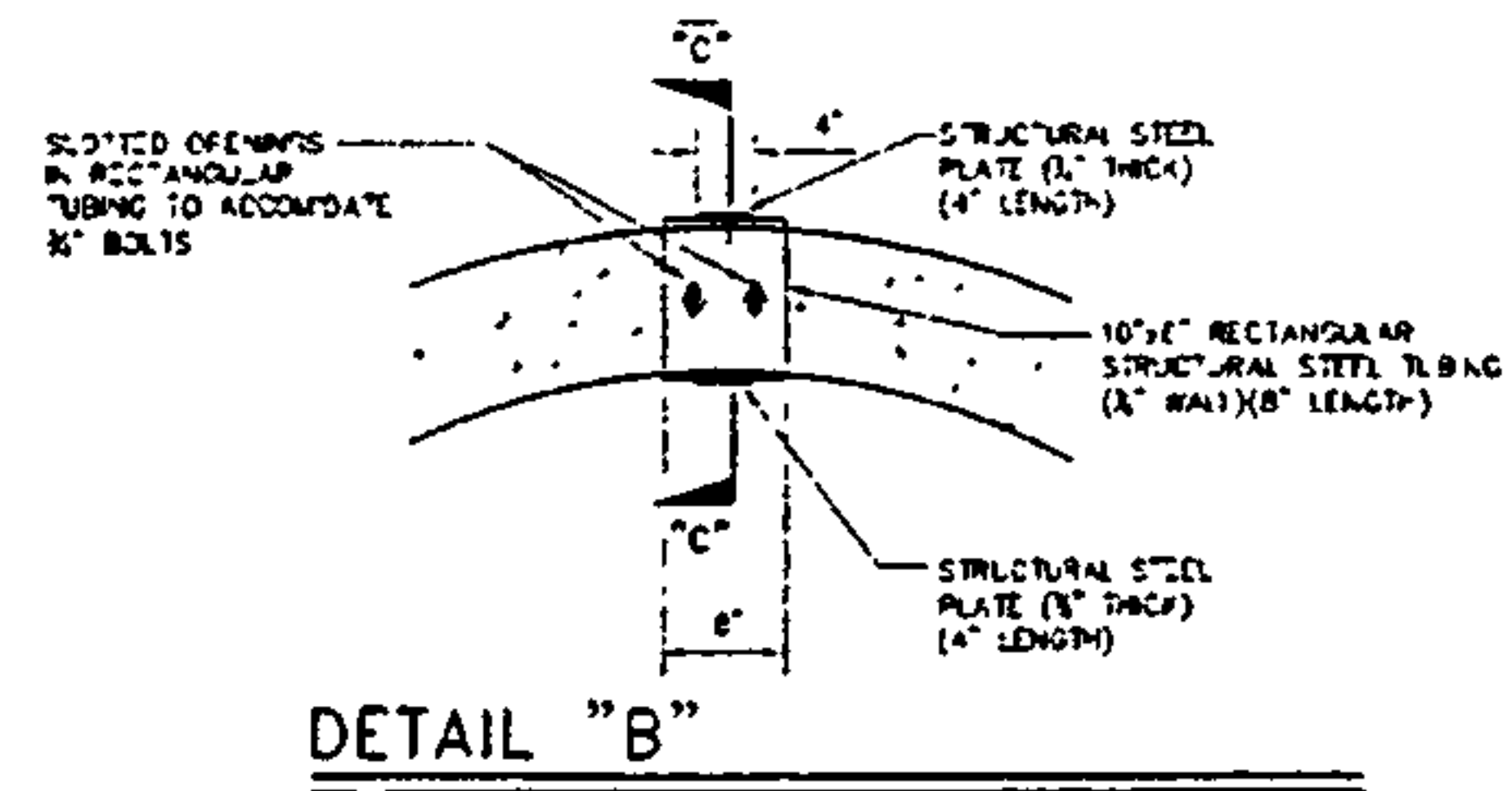


6' DIAMETER BEEHIVE INLET MANHOLE SECTION
SCALE: 3/8"=1'-0"

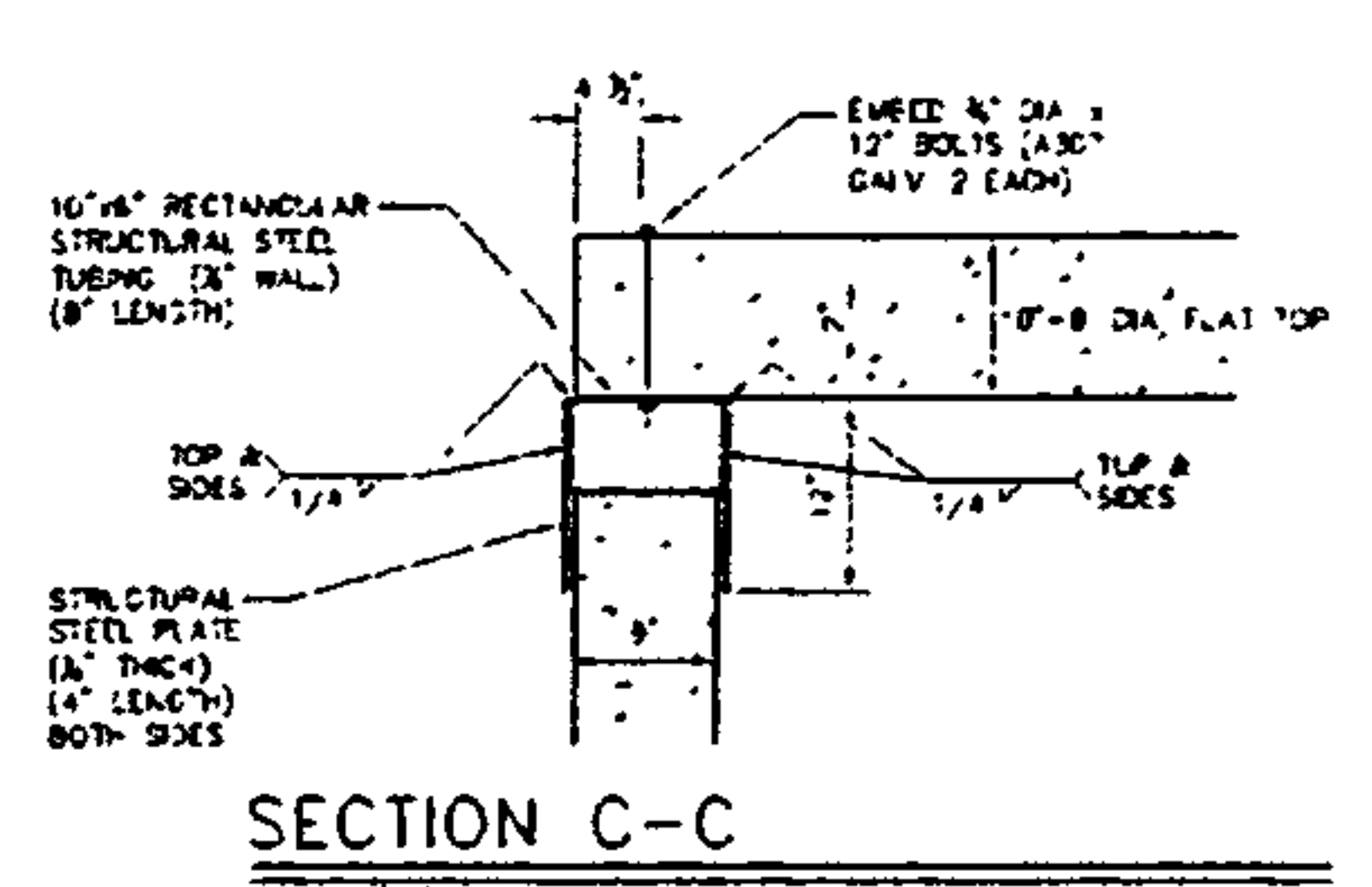


8' DIAMETER BEEHIVE INLET SECTION
SCALE: 3/8"=1'-0"

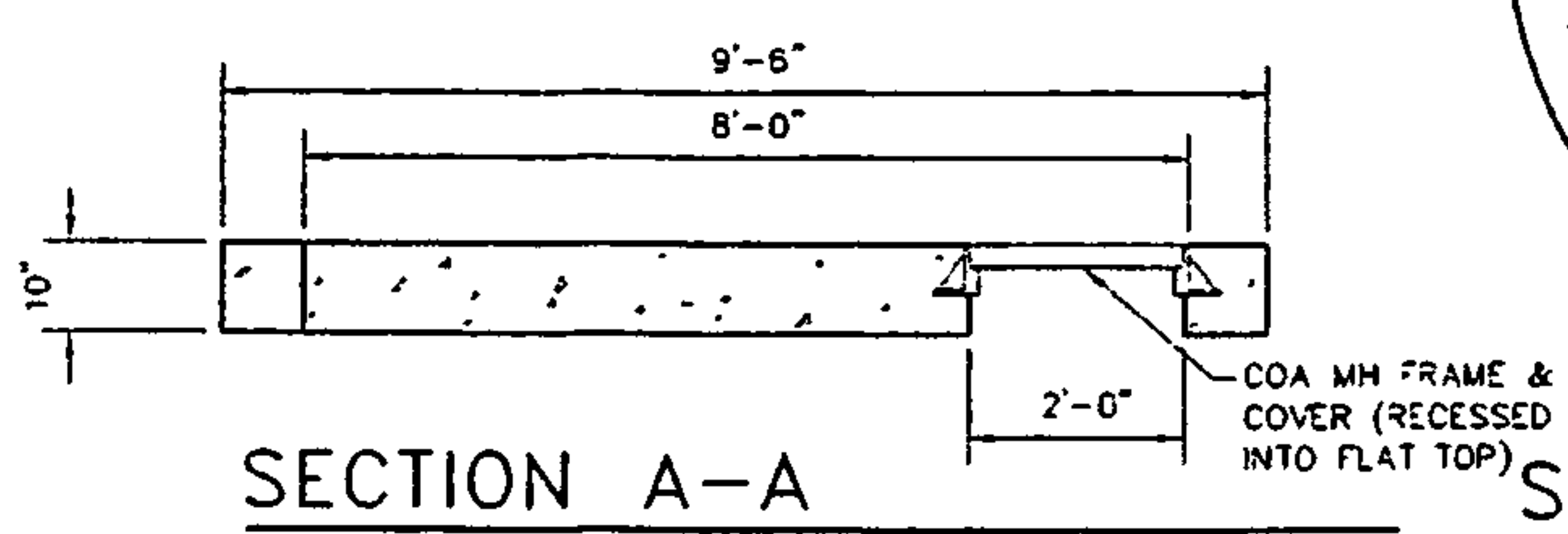
LEGEND
TOW = TOP OF WALL
BOW = BOTTOM OF WALL
FL = FLOW LINE ELEVATION



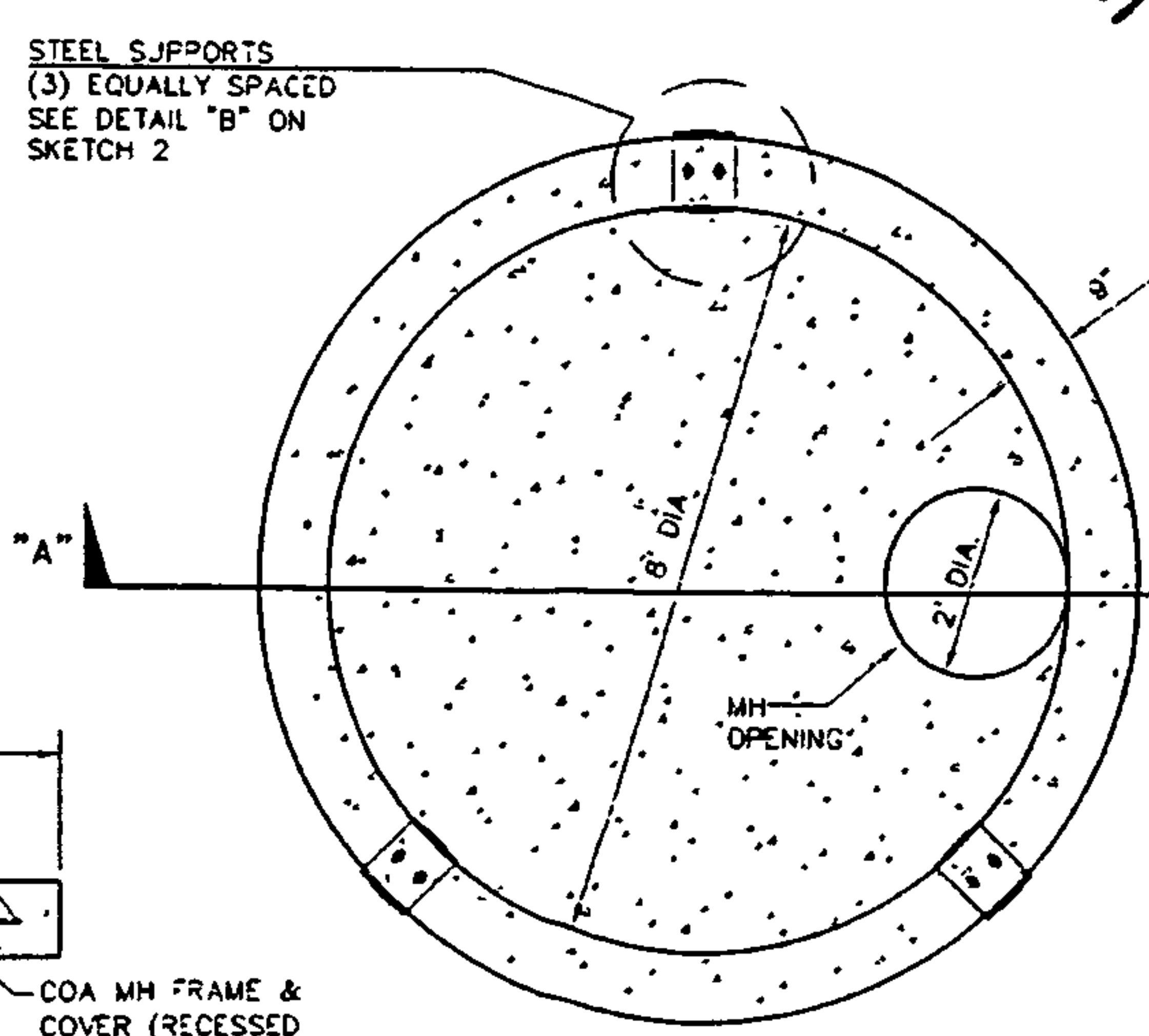
DETAIL "B"
SCALE: 1"=1'-0"



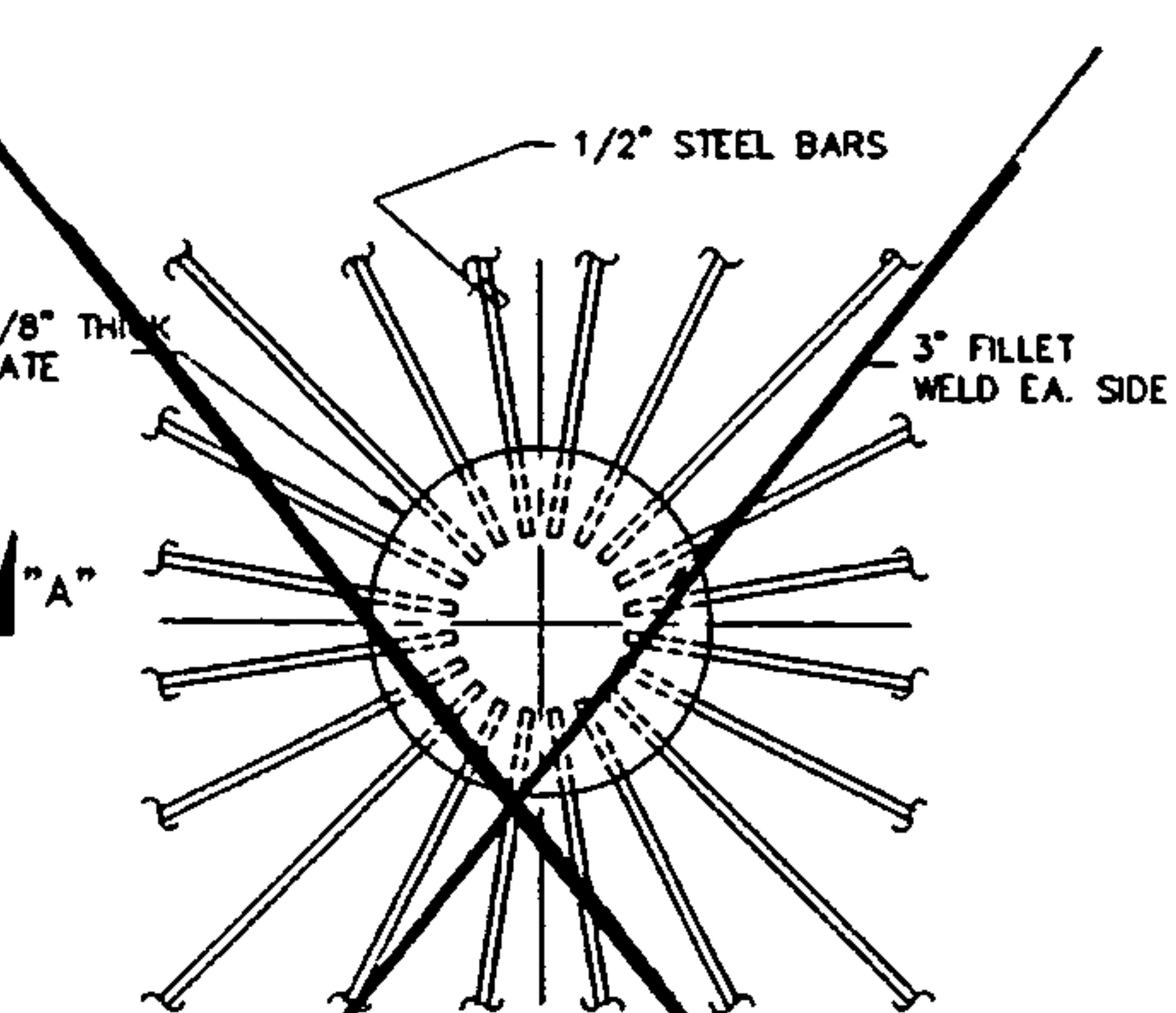
SECTION C-C
SCALE: 1"=1'-0"



SECTION A-A
SCALE: 1"=2'-0"

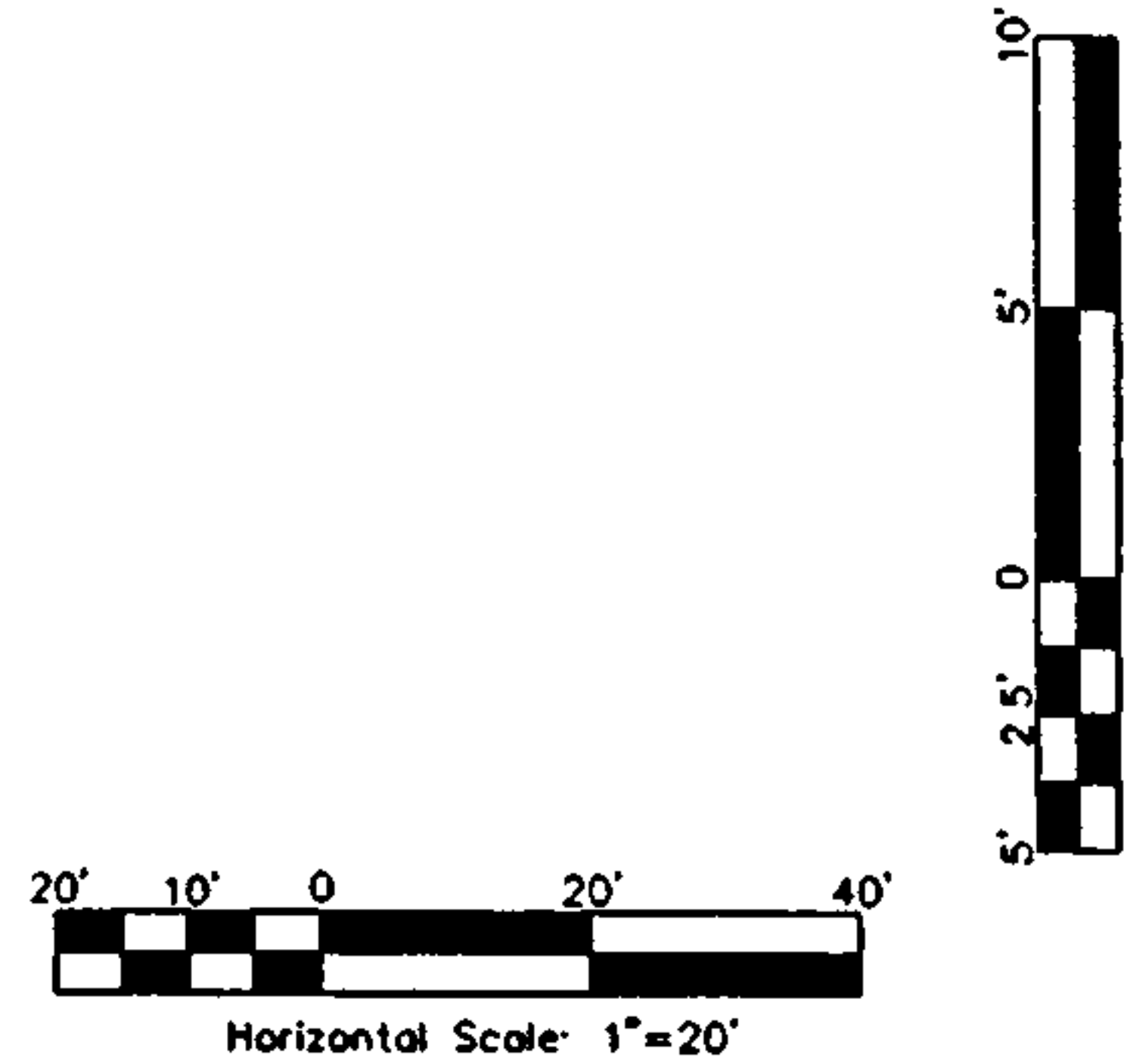


SLAB TOP INLET PLAN
SCALE: 1"=2'-0"



STEEL PLATE DETAIL
SCALE: 1 1/2"=1'-0"

BASE BID & BID ALTERNATE NO. 2



Smith Engineering Company
1961050
A Public Works Engineering Company

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP	
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D BEEHIVE INLET DETAIL SHEET	
Design Review Committee	City Engineer Approval
City Project No. 538105	Zone Map No. J-10
Sheet 37	Of 50

AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEERS SEAL	
CONTRACTOR	DATE	CONTRACTOR	DATE	NO.	BY	NO.	BY
CONTRACTOR: SLD 1929	DATE: 8/06	CONTRACTOR: SLD 1929	DATE: 8/06				
STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN ALBUQUERQUE, AT THE HIGHWAY I-40 AND STATE ROAD 448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A STANDARD MISHC BRASS TABLET, STAMPED "STA 1-40-18", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND. (N 1494559.06, E 364150.93)	DATE: 8/06	STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN ALBUQUERQUE, AT THE HIGHWAY I-40 AND STATE ROAD 448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A STANDARD MISHC BRASS TABLET, STAMPED "STA 1-40-18", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND. (N 1494559.06, E 364150.93)	DATE: 8/06				
RECORDED BY	DATE	RECORDED BY	DATE				

[illegible]

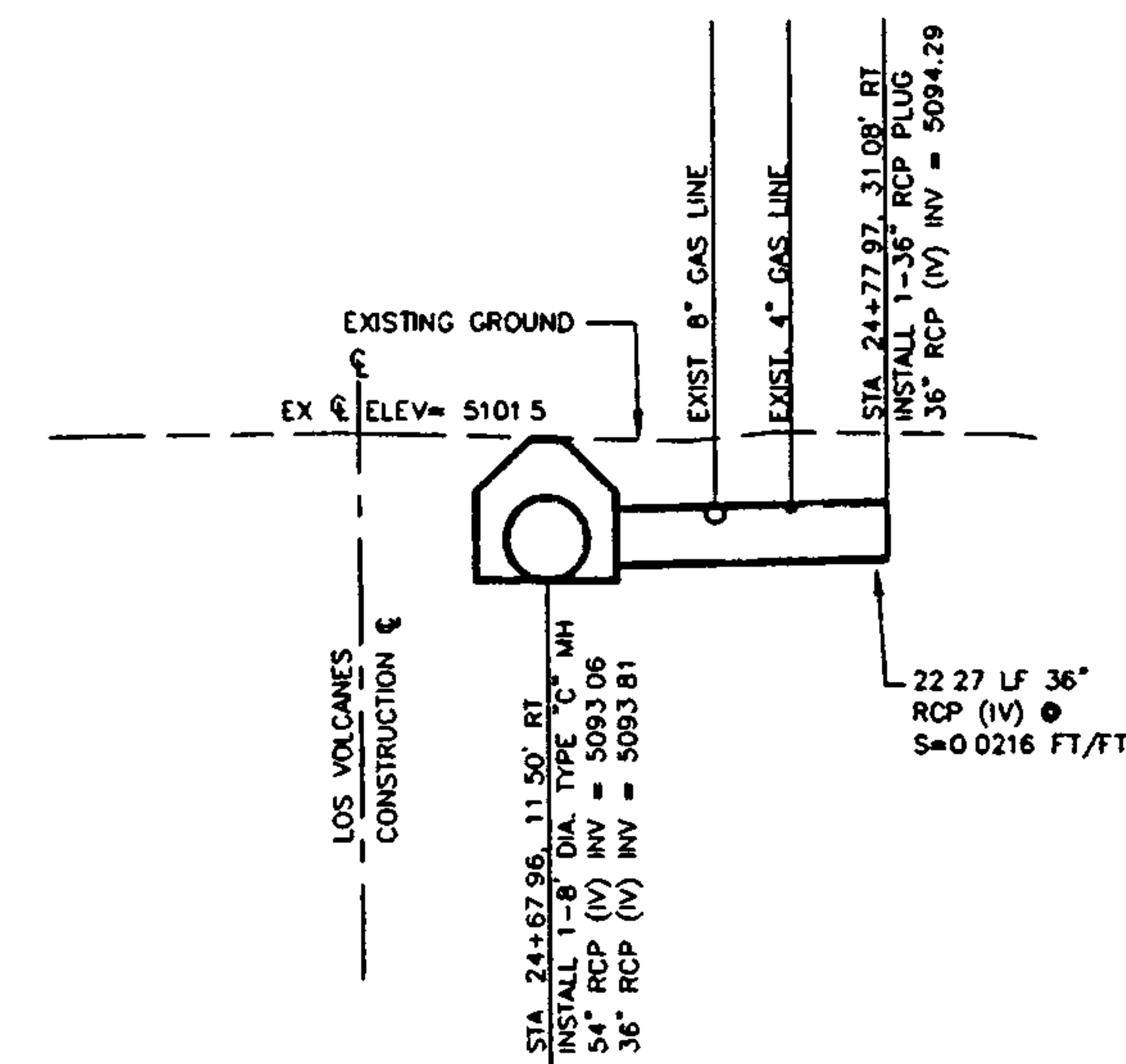
STORM DRAIN LATERAL
AT STA. 19+59.30
LOS VOLCANES ROAD

STORM DRAIN LINE "V"
LOS VOLCANES ROAD

STORM DRAIN LINES "W"
LOS VOLCANES ROAD

STORM DRAIN LINE "X"
LOS VOLCANES ROAD

**BID ALTERNATE
NO. 1**



STORM DRAIN LINE "Y"
LOS VOLCANES ROAD

STORM DRAIN LINE "Z"
LOS VOLCANES ROAD

90' DRAINAGE EASEMENT
24" STORM DRAIN LATERAL
AT STA. 24+24.77

Horizontal Scale: 1"=20'

196105D

 **Smith Engineering Company**
A Full Service Engineering Company

2020 Square, Birmingham, A.B. 35202 Birmingham, New Mexico 87102

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

**TITLE: WEST MESA DIVERSION PROJECT PHASE 2D
STORM DRAIN LATERAL PROFILES: LOS
VOLCANES ROAD**

Design Review Committee	City Engineer Approval
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City Project No. 538105

Zone Map No.
J-10

Sheet	39	of	50
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Vertical Scale, 1" = 5'		STORM DRAIN PIPE REALIGNMENT		ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS BUILT INFORMATION	
A	11/5/04					FIELD NOTES		1-40-18 NMHC/ACS ELEV. 5103.98 FEET (SLD 1929)		CONTRACTOR SPART BROTHERS	
						BY DATE		STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN ALBUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD 448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A STANDARD NMHC BRASS TABLET, STAMPED "STA 1-40-18", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND (N 149+859.08 E 38+150.93)		DRAWN BY BLUE SKY DATE 11/11/04	
										CHECKED BY BLUE SKY DATE 11/11/04	
										CORRECTED BY BLUE SKY DATE 11/11/04	
										MICRO-FILM INFORMATION	
										RECORDED BY DATE	
										NO.	
DESIGNED BY DLA		DATE 06/04									
DRAWN BY DLA-LL		DATE 06/04									

① PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PNM-GAS (JACK CODE 241-7770) NOTE: PNM-GAS REQUIRES 4 WEEKS TO SCHEDULE ORDERS TO PERFORM ANY WORK.

STA. 25+81.06, 62.50' LT
 INSTALL DOUBLE "A" STORM INLET
 24" RCP (IV) INV = 5097.45
 EXIST 18" SAS
 EXIST 8" WATER
 STA. 25+28.82, 62.42' LT
 INSTALL DOUBLE "A" STORM INLET
 24" RCP INV IN = 5087.15
 30" RCP INV OUT = 5097.05
 EXIST UNDERGROUND TELEPHONE
 EXIST 2" GAS
 STA. 25+28.65', 13.00' LT
 INSTALL 1-55"x91"x30" RCHFP TEE
 55"x91" RCHFP (IV) INV = 5095.05
 30" RCP (IV) INV = 5096.72
 EXISTING GROUND
 46.17 LF 30" RCP (IV) S=0.0071 FT/FT
 43.76 LF 24" RCP (IV) S=0.0069 FT/FT
 INLET
 STA. 25+81.23, 62.62' LT
 INSTALL DOUBLE "A" STORM INLET

SCALE. 1" = 20' (HORIZ)
1" = 5' (VERT)

SCALE: 1" = 20' (HORIZ)
1" = 5' (VERT)

SCALE: 1" = 20' (HORIZ)
1" = 5' (VERT)

SCANNED BY
MESA REPRO

SCALE: 1" = 20' (HORIZ)
1" = 5' (VERT)

SCALE. 1" = 20' (HORIZ.)
1" = 5' (VERT.)

60-72-L

DOUGLAS L. ANDREWS
1977
AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Douglas L. Andrews

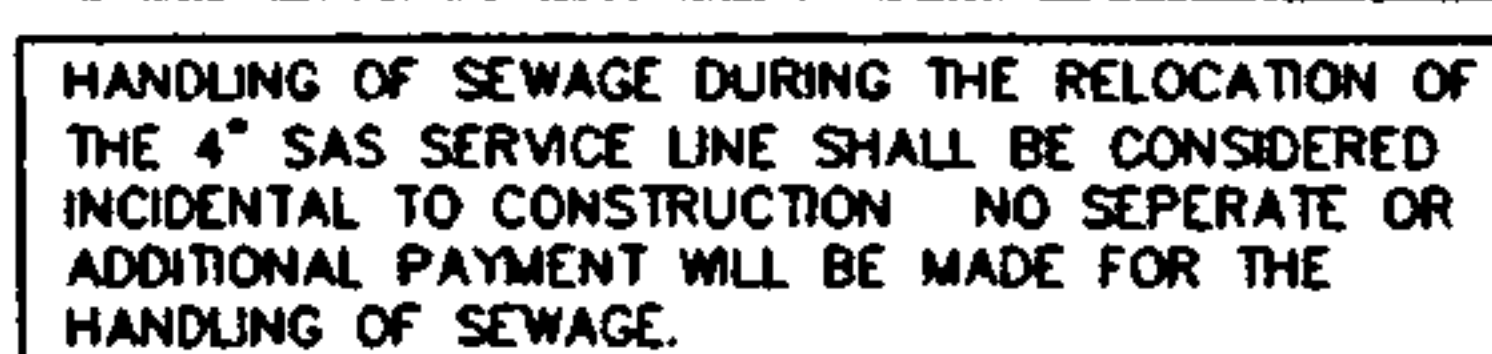
ENGINEERS SEAL

Vertical Scale 1' = 5'

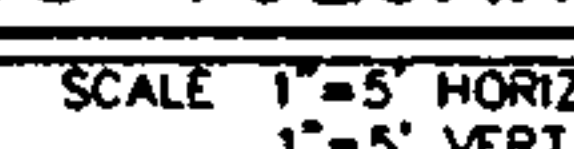
**CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP**

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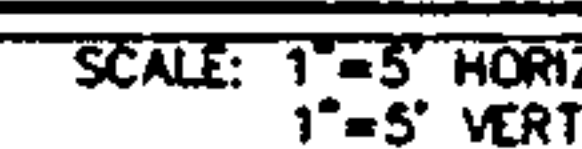
SURVEY INFORMATION		FIELD NOTES		DATE	
BENCH MARKS		STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN		NO.	
1-40-18 NMSHC/ACS ELEV. 5103.88 FEET (SLD 1929)		ABUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD		BY	
STANDARD NMSHC BRASS TABLET, STAMPED		448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A		DATE	
"51A -10-18", SET IN TOP OF A CONCRETE POST FLUSH		WITH THE GROUND, (N 1494559.08, E 384150.93)		NO.	
RECORDED BY		DATE		MICRO-FILM INFORMATION	
CONTRACTOR		DATE		NO.	
AS BUILT INFORMATION		DATE		BY	
S&S BROTHERS		DATE		NO.	



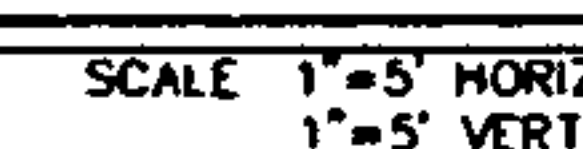
SCALE: 1"=5' HORIZ
1"=5' VERT



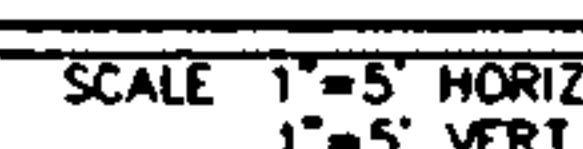
SCALE 1"=5' HORIZ
1"=5' VERT



SCALE: 1"=5' HORIZ
1"=5' VERT



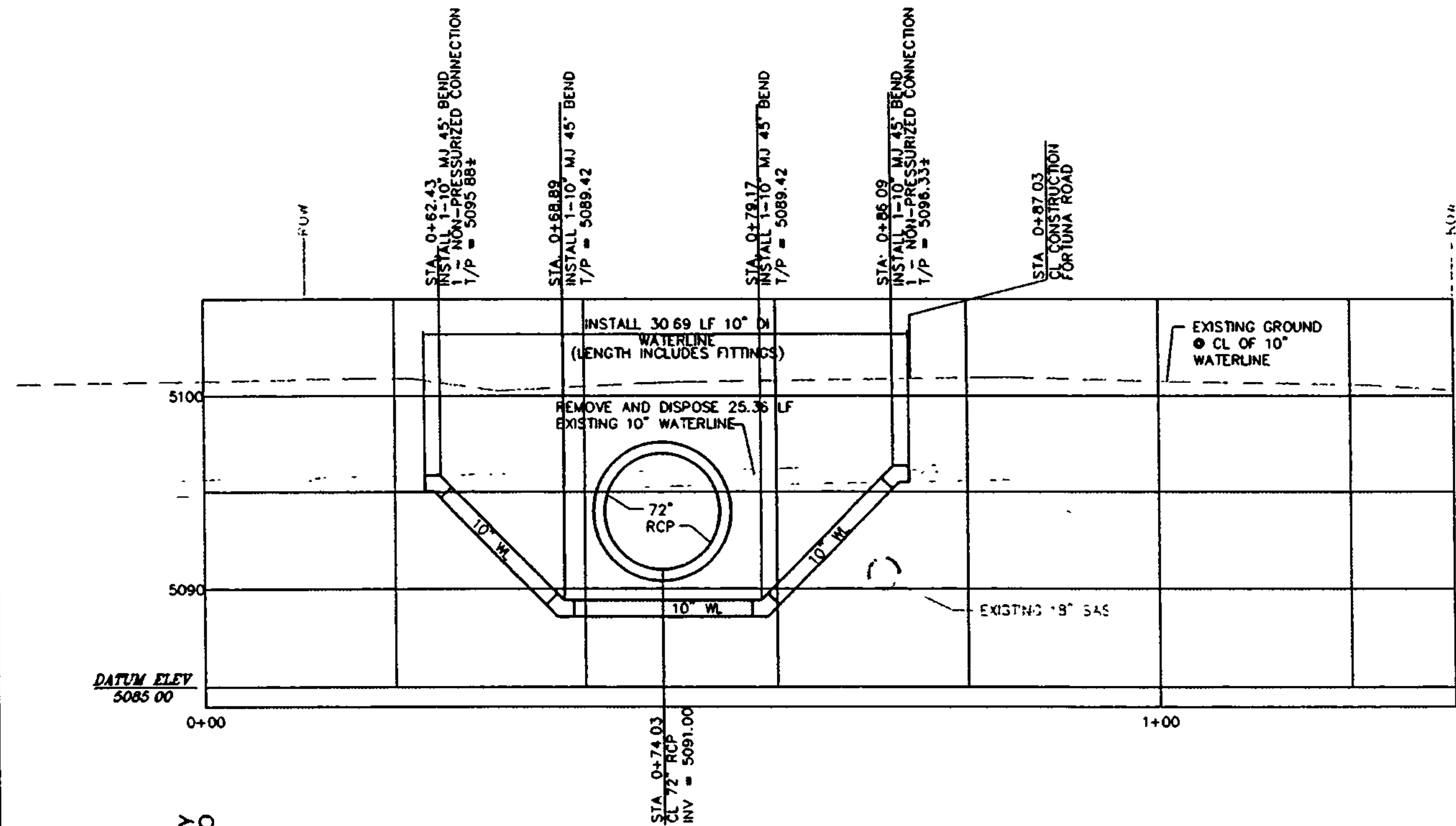
SCALE 1"=5' HORIZ
1"=5' VERT



SCALE 1"=5' HORIZ
1"=5' VERT

1. ALL WATERLINE FITTINGS INSTALLED THAT CONNECT TO EXISTING WATERLINES SHALL UTILIZE PORTLAND CEMENT CONCRETE BLOCKING PER COA STD. DWG. 2320.
2. ALL NEW WATERLINE PIPE JOINTS RELATIVE TO THIS SHEET SHALL BE RESTRAINED

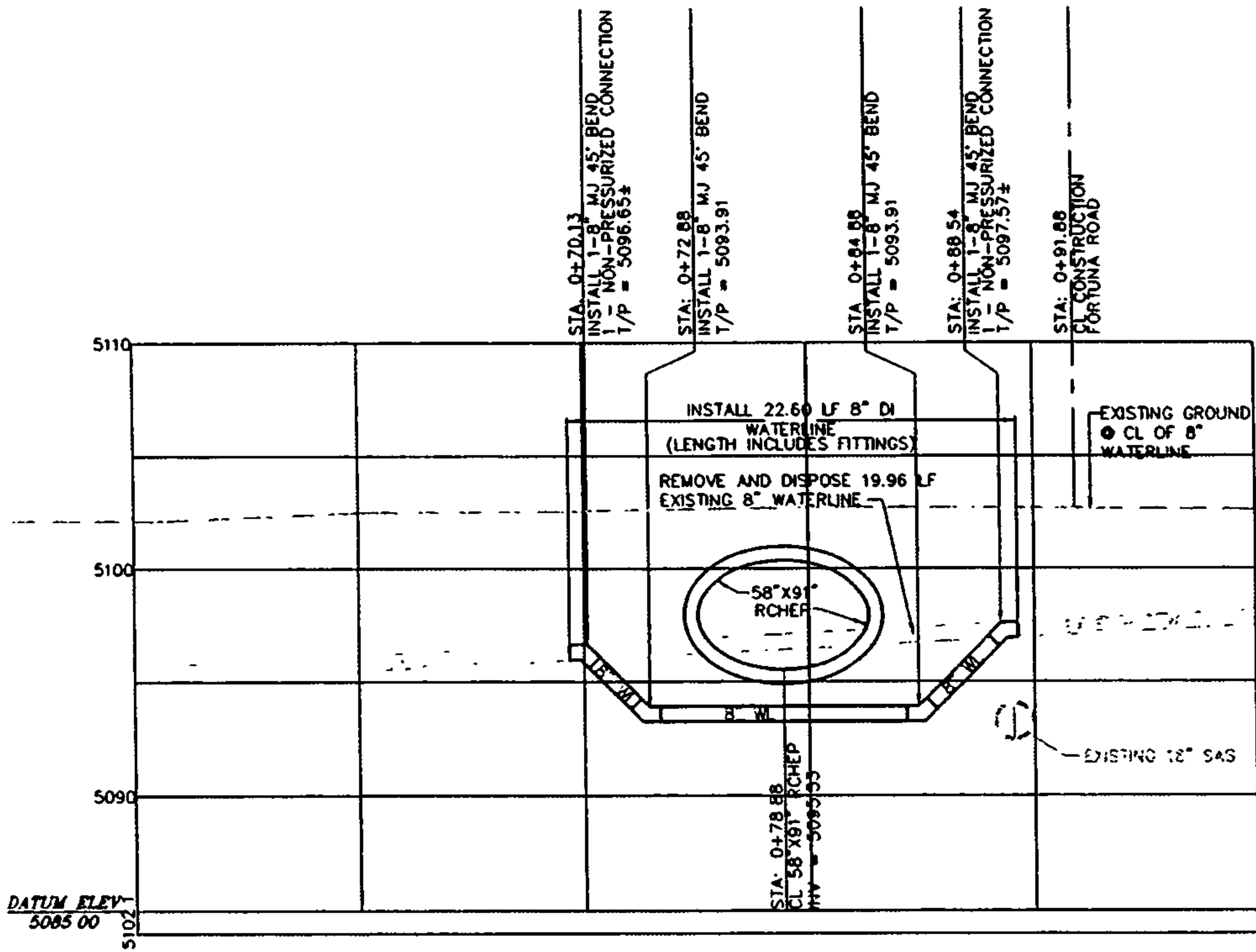
	196105D							
	Smith Engineering Company							
	A Full Service Engineering Company							
	4405 Square Boulevard, S.E. Suite #100 Albuquerque, New Mexico 87106							
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP								
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D UTILITY RELOCATION PROFILE SHEET LOS VOLCANES ROAD								
Design Review Committee		City Engineer Approval		List Design Details	Date / Day / Yr		Date / Day / Yr	
City Project No.		Zone Map No.		Sheet		Of		
538105		J-10				41 50		



10" WATERLINE RELOCATION
STA. 18+58.24 FORTUNA RD. (FIRELINE TO KENS PLUMBING AND HEATING)

SCALE: 1"=5' HORIZ
1"=5' VERT

SCANNED BY
MESA REPRO



8" WATERLINE RELOCATION
STA 26+15.35 FORTUNA RD. AT QUAILBRUSH DR. (LOOKING WEST)

SCALE: 1"=5' HORIZ
1"=5' VERT

GENERAL NOTES

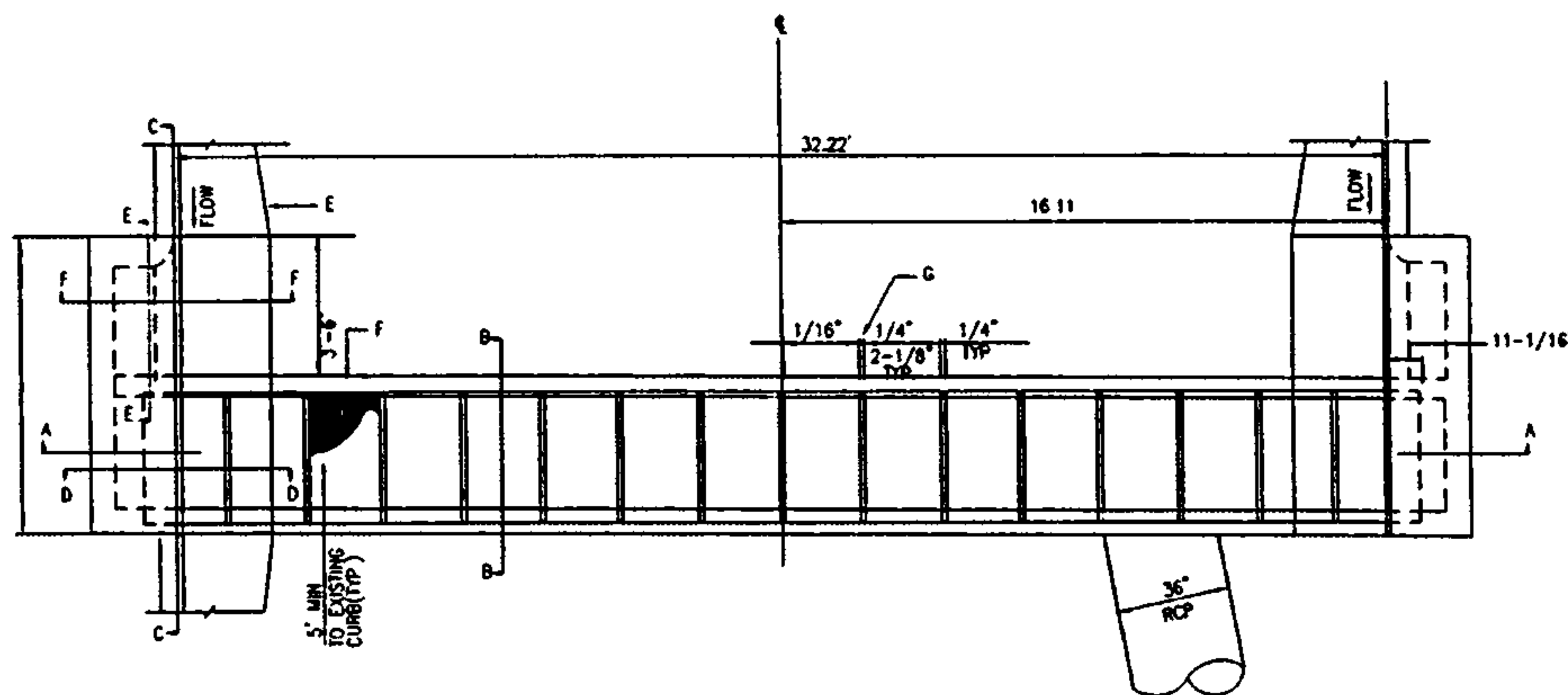
- ALL WATERLINE FITTINGS INSTALLED THAT CONNECT TO EXISTING WATERLINES SHALL UTILIZE PORTLAND CEMENT CONCRETE BLOCKING PER COA STD DWG. 2320
- ALL NEW WATERLINE PIPE JOINTS RELATIVE TO THIS SHEET SHALL BE RESTRAINED

196105D
Smith Engineering Company
A Full Service Engineering Company
2000 Spruce Street, N.E. Suite 200, Albuquerque, New Mexico 87102

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP			
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D UTILITY RELOCATION PROFILE SHEET FORTUNA ROAD			
Design Review Committee	City Engineer Approval	Last Design Update	
City Project No. 538105	Zone Map No. J-10	Sheet 42	Of 50

ENGINEER'S SEAL DANIEL A. ANDREWS REGISTERED PROFESSIONAL ENGINEER 11771 7-26-04		NO. DATE		REMARKS REVISIONS DESIGN		DESIGNED BY D.A. DATE 06/04		DRAWN BY D.A.L.L. DATE 06/04		CHECKED BY D.A. DATE 06/04	
SURVEY INFORMATION		FIELD NOTES		NO. DATE		BY		REMARKS		DATE	
1-40-18 NASHC/ACS ELEV. 5103.88 FEET (SLD 1929)		STATION IS LOCATED 3.5 MILES NW OF DOWNTOWN ALBUQUERQUE, AT THE HIGHWAY 1-40 AND STATE ROAD 448 (COORS RD., NW) INTERCHANGE. STATION MARK IS A STANDARD NASHC BRASS TABLET, STAMPED "STA 1-40-18", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND. (N 1494856.06 E 384150.83)									
BENCH MARKS		CONTRACTOR SPILLS		DATE		DATE		DATE		DATE	
AS BUILT INFORMATION		CONTRACTOR SPILLS		DATE		DATE		DATE		DATE	

SCANNED BY
MESA REPRO



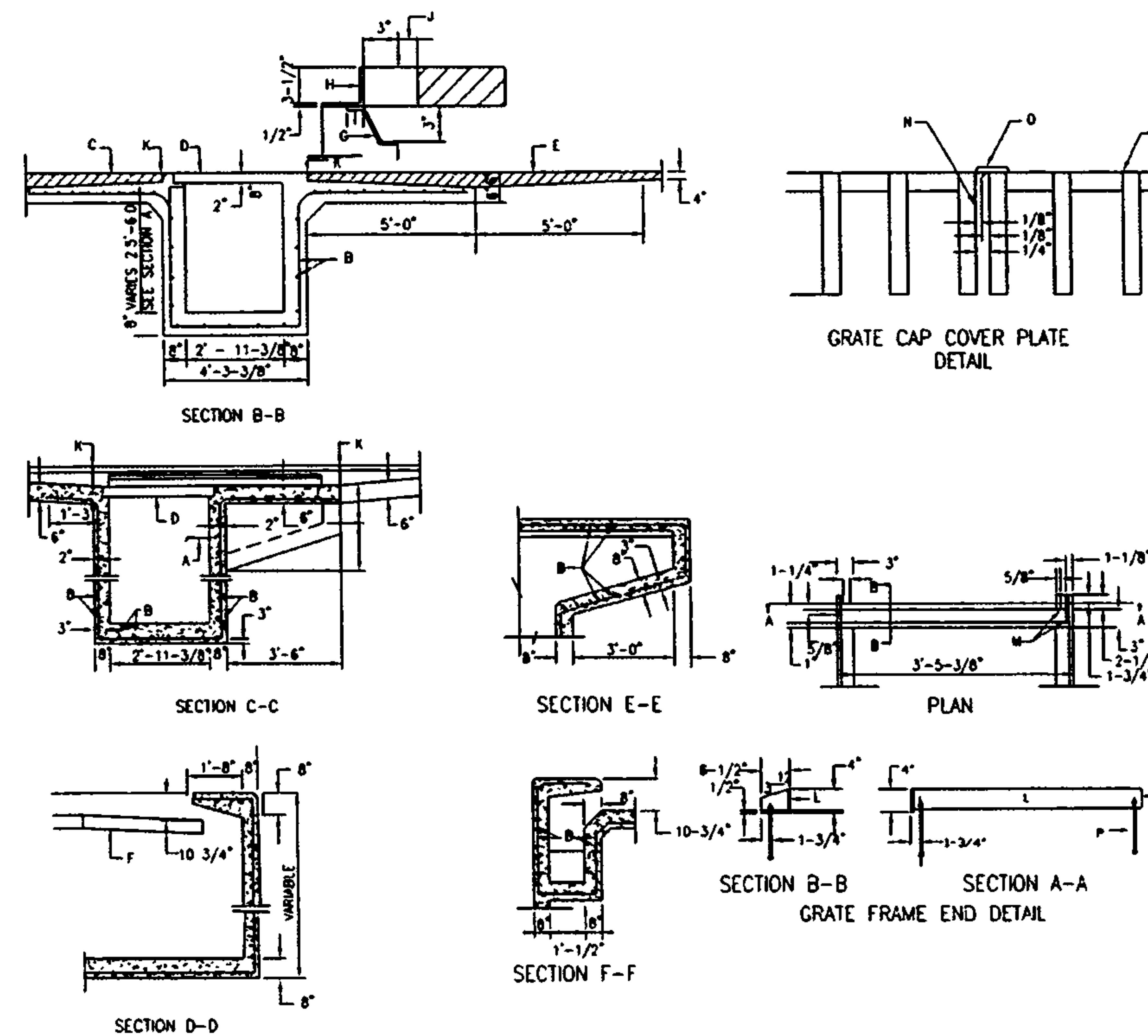
CATTLE GUARD PLAN DETAIL
STA 10+47.97 LANDMARK RD. (LOOKING NORTH)
SCALE: N.T.S.

GENERAL NOTES:

1. ALL EXPOSED METAL PARTS SHALL BE PAINTED PRIOR TO ASSEMBLY. WELDING, GRINDING AND DRILLING SHALL BE DONE PRIOR TO PAINTING. ALL DIMENSIONS ARE FINISH DIMENSIONS.
2. ALL PARTS SHALL BE OF STRUCTURE STEEL, GRADE 36.
3. FOR CLEANING AND PAINTING OF FRAME SEE DWG. 2215, GENERAL NOTE NO. 4.
4. FRAME MAY BE WELDED OR RIVETED.

CONSTRUCTION NOTES:

- A. NO. 4 BARS AT 6" O.C. EACH WAY.
- B. TOP OF CURB.
- C. CURB FLOWLINE.
- D. ANGLE ANCHOR DETAIL, SEE DWG. NO. 2205.
- E. SEE CITY OF ALBUQUERQUE STD. DWG. 2207 FOR STORM INLET GUTTER TRANSITION.
- F. GRATE FOR CITY OF ALBUQUERQUE STD. DWG. 2220 (TYP.) 16 TOTAL MODIFIED WITH 1" GAP COVER PLATE PER DETAIL THIS SHEET.
- G. 1/4" SPACE BETWEEN GRATES (TYP.)
- H. CONCRETE FILL.



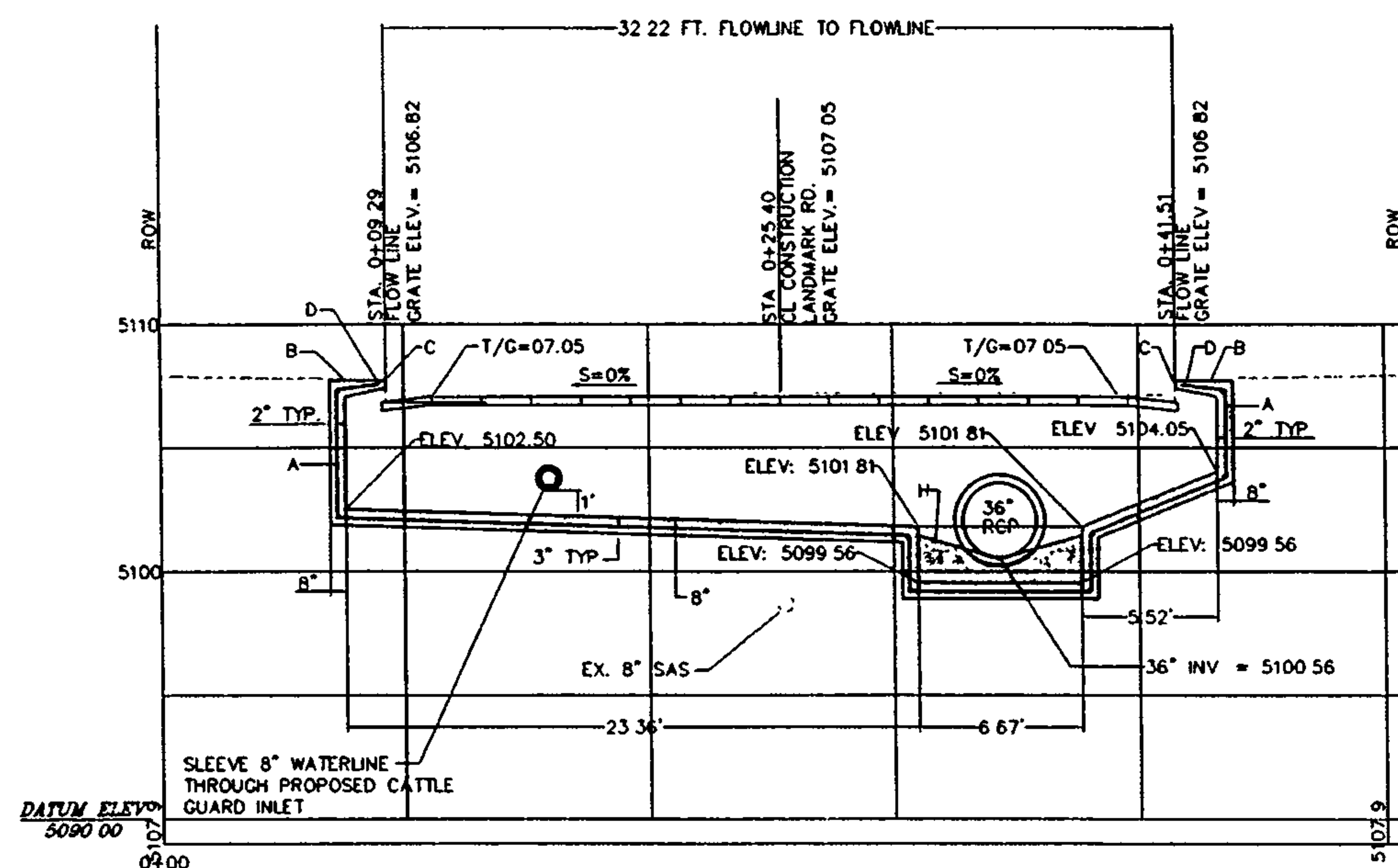
CATTLE GUARD MISC DETAILS
SCALE: N.T.S.

GENERAL NOTES:

1. ALL EXPOSED METAL PARTS SHALL BE PAINTED PRIOR TO ASSEMBLY. WELDING, GRINDING AND DRILLING SHALL BE DONE PRIOR TO PAINTING. ALL DIMENSIONS ARE FINISH DIMENSIONS.
2. ALL PARTS SHALL BE OF STRUCTURE STEEL, GRADE 36.
3. FOR CLEANING AND PAINTING OF FRAME SEE DWG. 2215, GENERAL NOTE NO. 4.
4. FRAME MAY BE WELDED OR RIVETED.

CONSTRUCTION NOTES:

- A. FOR STORM INLET DEPTHS GREATER THAN 4', INSTALL STD. STEPS. SEE STD. DETAIL.
- B. NO. 4 BARS AT 6" O.C. EACH WAY.
- C. ROUGH TEXTURE CONCRETE SURFACE (TYP.).
- D. GRATE.
- E. THICKEN ASPHALT PAVEMENT TO 6" AT EDGE OF APRON BOTH SIDES OF INLET (TYP.).
- F. GRATE FRAME.
- G. 1" X 1/8" STEEL STRAP-WELD TO ANGLE 4" O.C.
- H. 4" X 5" X 1/2"
- J. 2" CLEARANCE.
- K. SEE PLAN.
- L. 3-1/2" X 3" X 3/8" X 3'-4-3/8".
- M. 2-3/8" RIVETS AT EACH CORNER, SEE GENERAL NOTE NO. 4.
- N. 1/8" RIVET WELD 2" LONG AT 6" O.C. (TYP.).
- O. 1/2" X 1" X 1/8" STEEL ANGLE FULL LENGTH OF GRATE ONE SIDE ONLY EACH GRATE.
- P. FOUR (4) EACH 1/2" X 8" BOLTS WITH SQUARE HEADS AND NUTS. ONE BOLT AT EACH CORNER FOR ANCHORING THE FRAME INTO THE CONCRETE WALL.



SECTION A-A
SCALE: 1"=5' HORIZ
1"=5' VERT

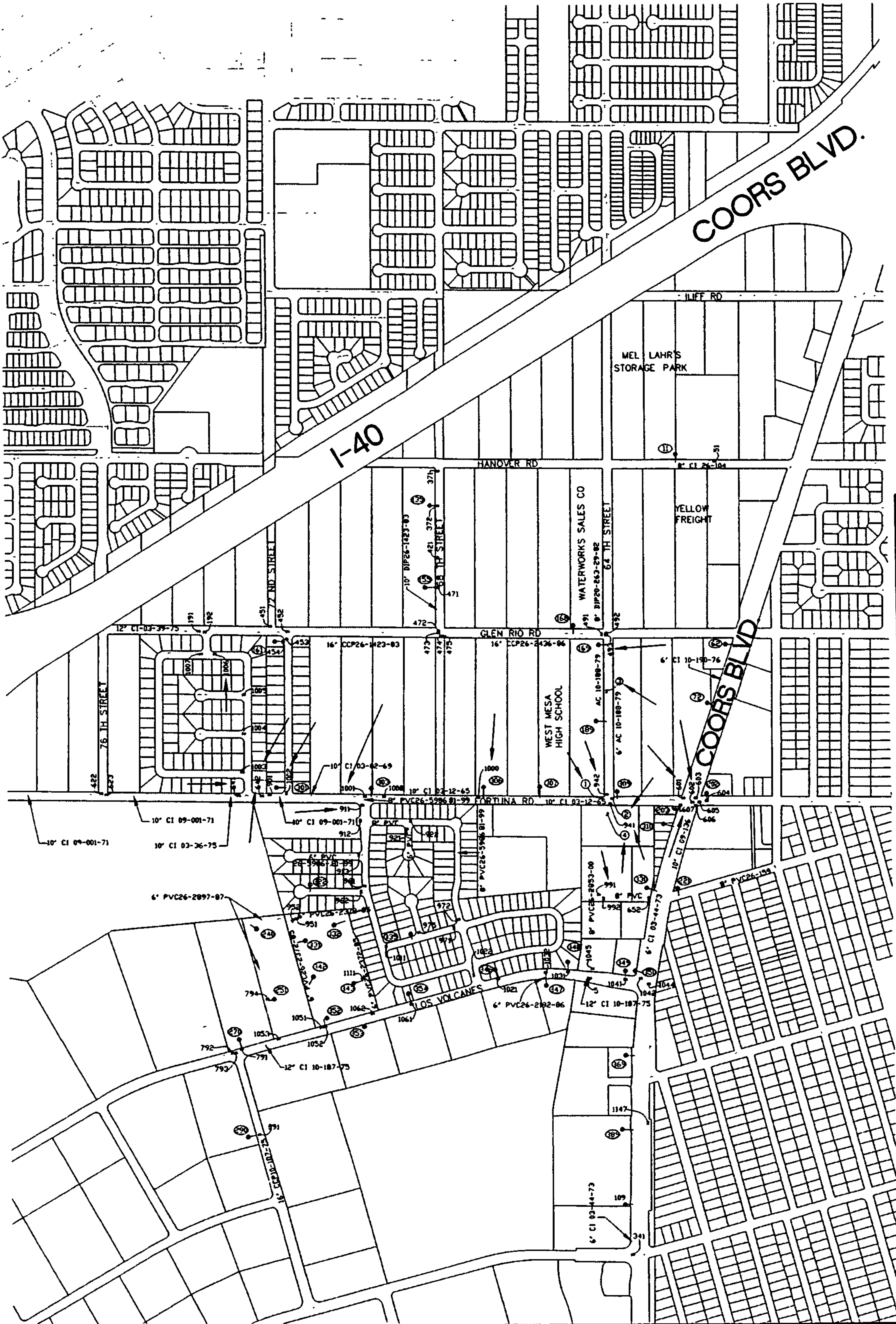


CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP	
TITLE: WEST MESA DIVERSION PROJECT PHASE 2D CATTLE GUARD INLET DETAIL SHEET	
Design Review Committee	City Engineer Approval
City Project No. 538105	Zone Map No. J-10
Sheet 43	of 50

AS BUILT INFORMATION										BENCH MARKS		SURVEY INFORMATION				ENGINEERS SEAL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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GENERAL NOTES:

1. DISINFECTION AND FILLING OF WATER LINES SHALL CONFORM TO THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS 801.17 EXCEPT AS MODIFIED HEREIN. THIS WORK IS INCIDENTAL TO THE WATERLINE CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE MADE.
2. ALL NECESSARY MEASURES SHALL BE TAKEN TO PREVENT CONTAMINATED MATERIALS FROM ENTERING THE WATER LINE DURING STORAGE, CONSTRUCTION, OR REPAIR INCLUDING CAPPING THE WATER LINE AT NIGHT AND DURING ALL BREAKS IN PIPE LAYING.
3. REMOVE ANY MATERIALS, DIRT OR DEBRIS THAT MAY HAVE ENTERED THE WATER LINE PRIOR TO DISINFECTION.
4. ADD A FLUSHING/DRAINING PORT TO ALL DEAD END LINES DISCHARGE POINTS AND FILLING POINTS WHICH ARE NOT FIRE HYDRANTS. PORT SHALL BE 2" MIN. UNLESS SHOWN OTHERWISE. PORT SHALL ALLOW PIPE TO FULLY DRAIN.
5. FILL THE WATER LINE PER THE PLAN SHOWN ON THIS SHEET THROUGH AN APPROVED BACK FLOW PREVENTION DEVICE. CONTRACTOR SHALL USE NECESSARY METHODS TO ALLOW ALL AIR IN THE WATER LINE TO RELEASE WITHOUT CONTAMINATING ANY EXISTING WATER LINES OR FIELD TAPPING CONCRETE CYLINDER PIPE.
6. PRESSURE TEST IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD SPECIFICATION 801.16.
7. DISINFECT THE WATER LINE PER CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS 801.17 AND AWWA C651 (LATEST EDITION). SODIUM OR CALCIUM HYPOCHLORITE ARE THE ONLY PERMISSIBLE FORMS OF CHLORINE TO BE USED. GRANULES OR TABLETS SHALL NOT BE PLACED IN THE WATER LINE. HOWEVER THEY MAY BE USED TO PREMIX A HIGHLY CHLORINATED SOLUTION. CONTRACTOR SHALL ENSURE THAT GRANULES OR TABLETS NOT DISSOLVED ARE NOT INTRODUCED INTO THE WATER LINE FROM THE HIGHLY CHLORINATED WATER BY SCREENING THE DISCHARGE FROM THE PRE-MIXING VESSEL OR BY OTHER PROVEN MEANS.
8. THE SLUG OR CONTINUOUS-FEED METHOD SHALL BE USED (WITH PRELIMINARY FLUSHING ON LINES LESS THAN 24" IN DIAMETER AND BROOM SWEEPING ON LINES 24" AND LARGER).
9. AFTER THE REQUIRED RETENTION PERIOD HEAVILY CHLORINATED WATER SHALL BE FLUSHED FROM THE WATER LINE PER THIS PLAN. INTRODUCE FLUSH WATER THROUGH AN APPROVED BACK FLOW DEVICE DECHLORINATION IS REQUIRED WHEN NOTED ON THIS PLAN.
10. FLUSH THE WATER LINE BY CAREFULLY THROTTLING THE VALVE AT THE DISCHARGE END TO PREVENT A VACUUM IN THE WATER LINE AND TO PREVENT INUNDATING THE DISCHARGE STRUCTURE.
11. IF FLUSHING INTO A SANITARY SEWER NOTIFY THE WASTEWATER UTILITY DIVISION AT 873-7015 PRIOR TO FLUSHING. IF FLUSHING TO A CITY OF ALBUQUERQUE STORM SEWER OR DRAINAGE CHANNEL, NOTIFY THE HYDROLOGY DIVISION AT 788-3654. IF FLUSHING TO AN AMAFCA STRUCTURE NOTIFY AMAFCA AT 884-2215 PRIOR TO FLUSHING. FLUSHING LINE SHALL BE SUPPORTED BY A STAND TO MAINTAIN AN 18" SEPARATION BETWEEN THE FLUSHING LINE AND THE DISCHARGE POINT OR MANHOLE RIM.
12. WHEN THE FLUSH WATER RESIDUAL CHLORINE IS LESS THAN 2.0 mg/L, THE CITY WILL TAKE A POTABILITY TEST. UPON PASSING THE CONTRACTOR SHALL REMOVE THE METER AND BACK FLOW PREVENTION DEVICE. IF LINE DOES NOT PASS, CONTRACTOR SHALL REPEAT DISINFECTION AND/OR FLUSHING UNTIL LINE PASSES.
13. PROVIDE CITY WITH A RECORD OF THE WATER VOLUME USED TO FILL AND FLUSH THE WATER LINE BASED ON WATER METER READINGS.
14. CONTRACTOR MAY SUBMIT AN ALTERNATE FILLING, DISINFECTING, AND FLUSHING PLAN FOR REVIEW AND APPROVAL AT LEAST 5 WORKING DAYS PRIOR TO FILLING.
15. THROTTLING SHALL BE PERFORMED USING VALVES NOT FIRE HYDRANTS.
16. THE CONTRACTOR SHALL BE GRANTED FREE WATER FOR TESTING AND FLUSHING. IF THE WATER LINE FAILS THE HYDROSTATIC OR POTABILITY TEST, THE CONTRACTOR SHALL PAY FOR THE ADDITIONAL WATER REQUIRED FOR RETESTING.



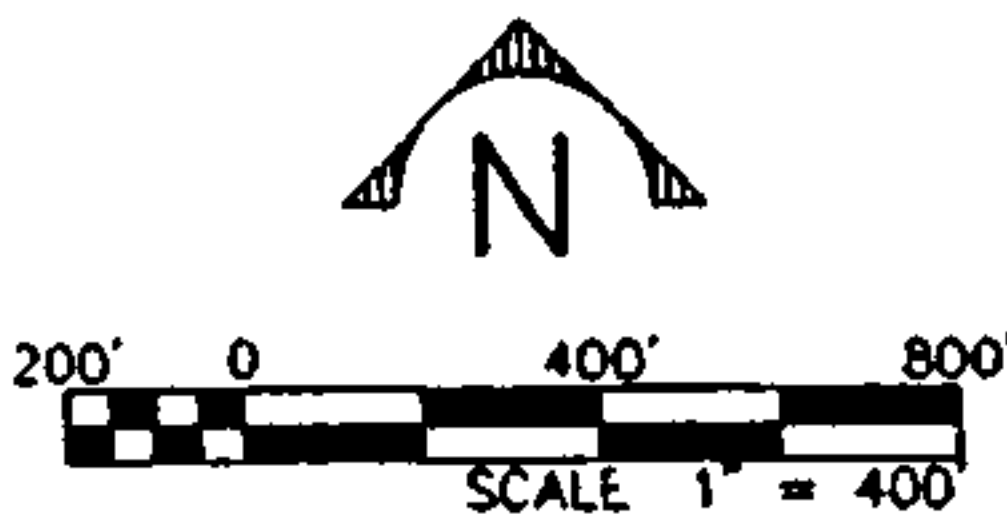
LOS VOLCANES RD
WATER SHUT OFF REQUIREMENTS

WORK ITEM	VALVES TO BE CLOSED DURING WORK ITEM	FIRE HYDRANTS OUT OF SERVICE DURING WORK ITEM
RAISING OF 12" WL IN LOS VOLCANES RD @ STA. 10+00	1045, 5, 1044 1022, 792, 793	349, 348, 347, 346 354, 343, 332, 331 342, 352, 240, 251 270, 353
RAISING OF 8" WL IN LOS VOLCANES RD @ STA. 12+19	1045, 5, 1044 1022, 792, 793	349, 348, 347, 346 354, 343, 332, 331 342, 352, 240, 251 270, 353
RELOCATION OF 12" WL IN LOS VOLCANES RD FROM STA. 15+46.55 TO STA. 25+80.30	1045, 5, 1044 1022, 792, 793	349, 348, 347, 346 354, 343, 332, 331 342, 352, 240, 251 270, 353

FORTUNA RD
WATER SHUT OFF REQUIREMENTS

WORK ITEM	VALVES TO BE CLOSED DURING WORK ITEM	FIRE HYDRANTS OUT OF SERVICE DURING WORK ITEM
LOWERING OF 10" WL @ FORTUNA STA. 18+58.24 (KEN'S HEATING AND PLUMBING)	①, 1000	306, 307
LOWERING OF 8" WL @ STA. 26+15.35 (FORTUNA) IN QUAILBRUSH DR	642, 911, 1001, 1002	301
LOWERING OF 10" WL IN FORTUNA BETWEEN STA. 29+76.53 AND STA. 30+03.27	642, 911, 1001, 1002	301
LOWERING OF 10" WL IN FORTUNA BETWEEN STA. 30+93.08 AND STA. 31+15.34	642, 911, 1001, 1002	301
LOWERING OF 10" WL IN FORTUNA BETWEEN STA. 33+44.83 AND STA. 33+75.23	641, 642, 1003, 1006	N/A
INSTALL 8" WL IN 12" STEEL CASING THROUGH CATTLEGUARD INLET IN LANDMARK ST	641, 642, 1003, 1006	N/A

THIS SHEET GENERATED
FROM CITY OF ALBUQUERQUE
G.I.S. INFORMATION



WATER SHUTOFF GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR TIMING AND COORDINATION OF THE WATER SHUT-OFF REQUIREMENTS IN CONJUNCTION WITH THE COMPLETION OF THIS PROJECT.
2. AT LEAST SEVEN (7) WORKING DAYS PRIOR TO CONSTRUCTION, CONTRACTOR SHALL CONTACT THE PUBLIC WORKS DEPARTMENT WATER SYSTEMS DIVISION (857-8200) TO INITIATE IMPLEMENTATION OF THIS WATER SHUT-OFF PLAN. ONLY CITY OF ALBUQUERQUE PERSONNEL SHALL OPERATE WATER VALVES.
3. ALL EFFECTED PROPERTY OWNERS OF A WATER-SHUT OFF SHALL BE NOTIFIED ONE WEEK PRIOR TO WATER-SHUT OFF.
4. ALL WATERLINE WORK INVOLVING PUBLIC WATERLINE SHUT-OFFS SHALL BE PERFORMED ON WEEKENDS OR AT NIGHT. BUSINESS AND RESIDENTIAL ADDRESSES THAT EXPERIENCE WATER SHUT-OFF AS A RESULT OF THIS WORK SHALL BE NOTIFIED IN WRITING AT LEAST SEVEN (7) DAYS PRIOR TO INSTALLATION.
5. CONTRACTOR SHALL CONTACT THE CITY OF ALBUQUERQUE FIRE DEPARTMENT (833-7391) A MINIMUM OF SEVEN (7) WORKING DAYS PRIOR TO ANY OF THE WATER SHUT-OFFS. THE CONTRACTOR MUST INFORM THE FIRE DEPARTMENT OF THE FIRE HYDRANTS TO BE OUT OF SERVICE DURING THE WATER SHUT-OFFS.
6. FIRE HYDRANTS NOT IN SERVICE DURING ANY WATER SHUT-OFF ARE TO BE BAGGED.

AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEERS SEAL		REVISIONS		DESIGNED BY		DRAWN BY		CHECKED BY	
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SCANNED BY
MESA REPRO

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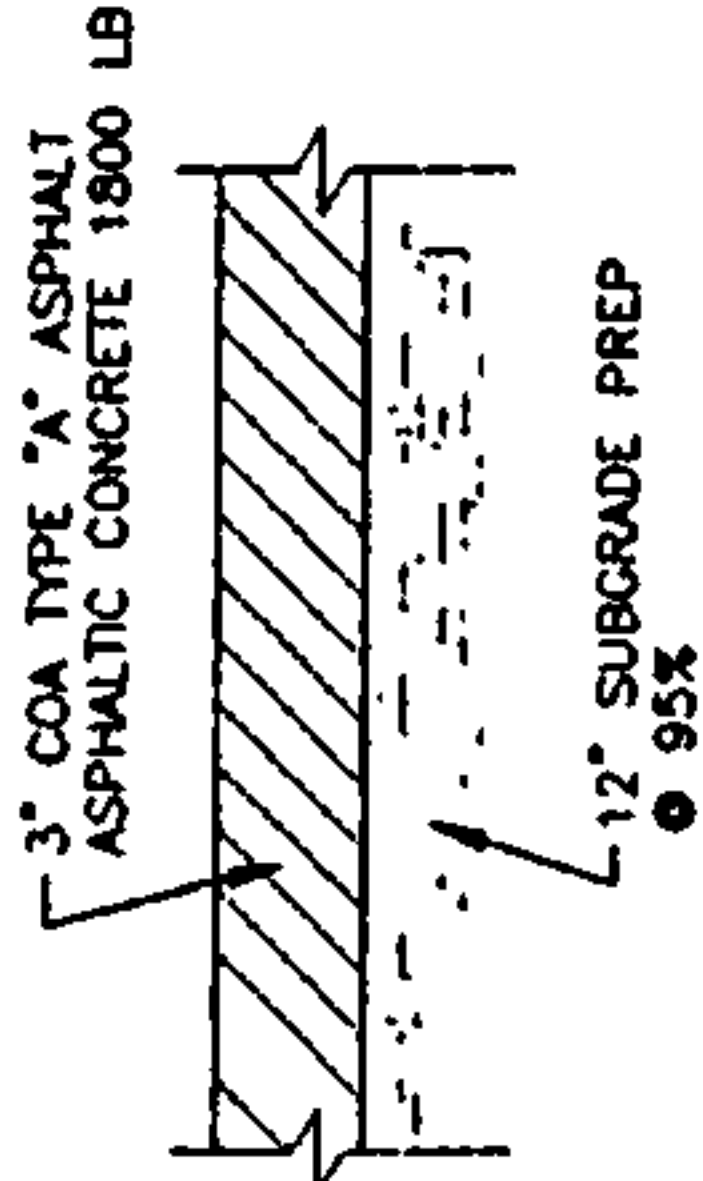
SCANNED BY
MESA REPRO

TRAFFIC CONTROL GENERAL NOTES

1. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A DETAILED TRAFFIC CONTROL PLAN (INCORPORATING THE TRAFFIC CONTROL CRITERIA LISTED BELOW) TO THE CONSTRUCTION COORDINATION DIVISION (364-1400) FOR REVIEW AND APPROVAL. THE TRAFFIC CONTROL PLAN FROM THE COA CONSTRUCTION COORDINATION DIVISION PRIOR TO THE START OF CONSTRUCTION.

TRAFFIC CONTROL CRITERIA

1. THE CONTRACTOR MUST MAINTAIN ACCESS TO ALL PROPERTIES DURING CONSTRUCTION EITHER BY MAINTAINING THEIR EXISTING ACCESS POINTS OR BY CONSTRUCTING TEMPORARY ACCESS POINTS DURING CONSTRUCTION.
2. THE CONTRACTOR MUST ALLOW POLICE ACCESS FROM THE SHAWN McWETHY VALLEY WEST SIDE POLICE COMMUNITY SUBSTATION TO COORS BLVD. AT ALL TIMES.
3. ALL DRIVING LANES UTILIZED AS PART OF THE TRAFFIC CONTROL PLAN MUST HAVE A MINIMUM WIDTH OF 12 FEET. TEMPORARY PAVEMENT MAY HAVE TO BE INSTALLED TO MAINTAIN THIS MINIMUM WIDTH. SEE TEMPORARY PAVEMENT SECTION DETAIL THIS SHEET.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PLACEMENT AND REMOVAL OF ALL TEMPORARY STRIPING ASSOCIATED WITH SUBMITTED TRAFFIC CONTROL PLAN.
5. ACCESS SIGNS FOR ALL PROPERTIES IMPACTED BY THE CONSTRUCTION WILL BE REQUIRED THROUGHOUT CONSTRUCTION.



TEMPORARY PAVEMENT
SECTION
N.T.S.

BID ALTERNATE
NO. 1





1961050
Smith Engineering Company
A Full Service Engineering Company
One Adams Avenue, Suite 200, Los Angeles, CA 90006

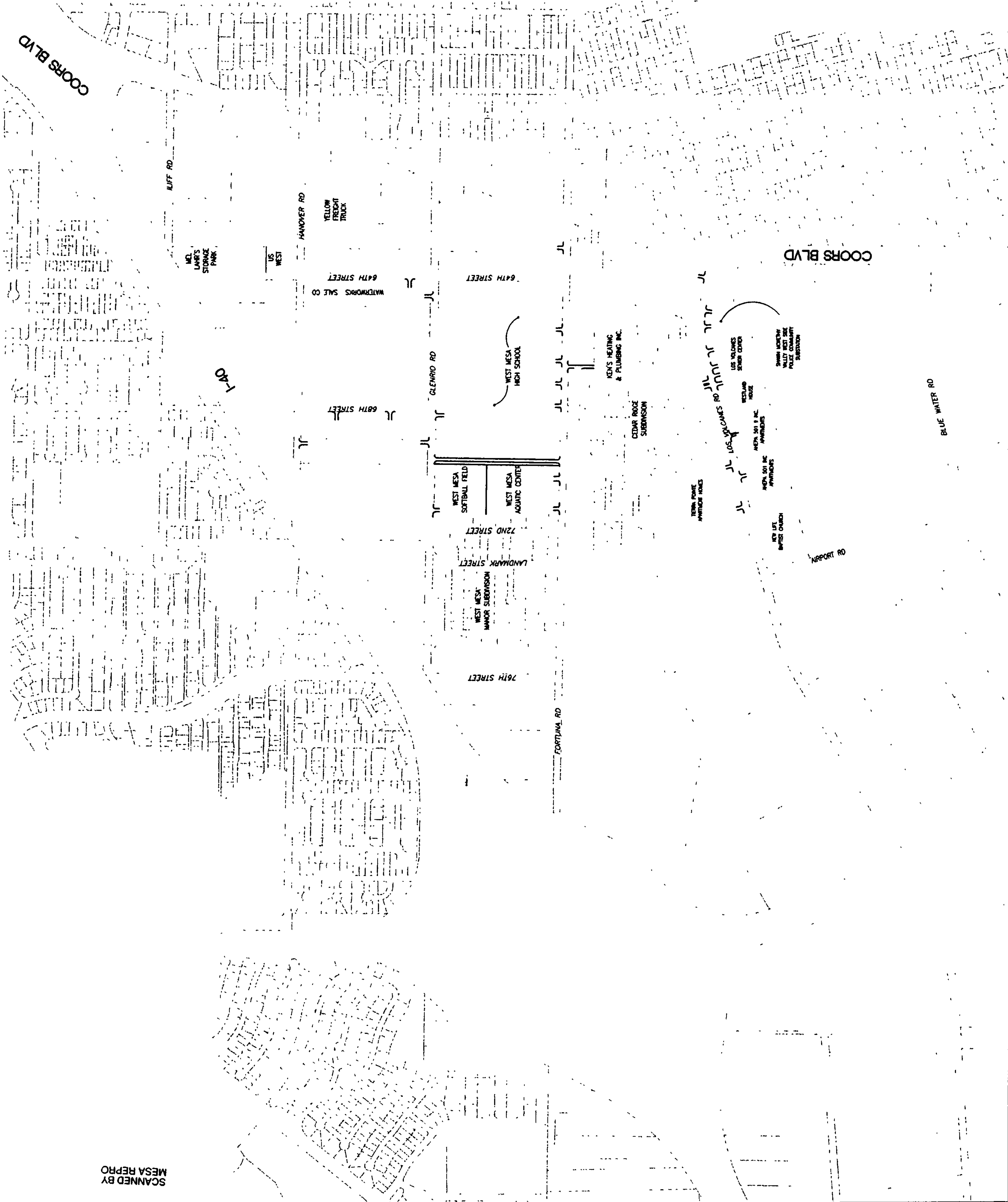
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: WEST MESA DIVERSION PROJECT PHASE 2D

TRAFFIC CONTROL CRITERIA - LOS VOLCANES RD.

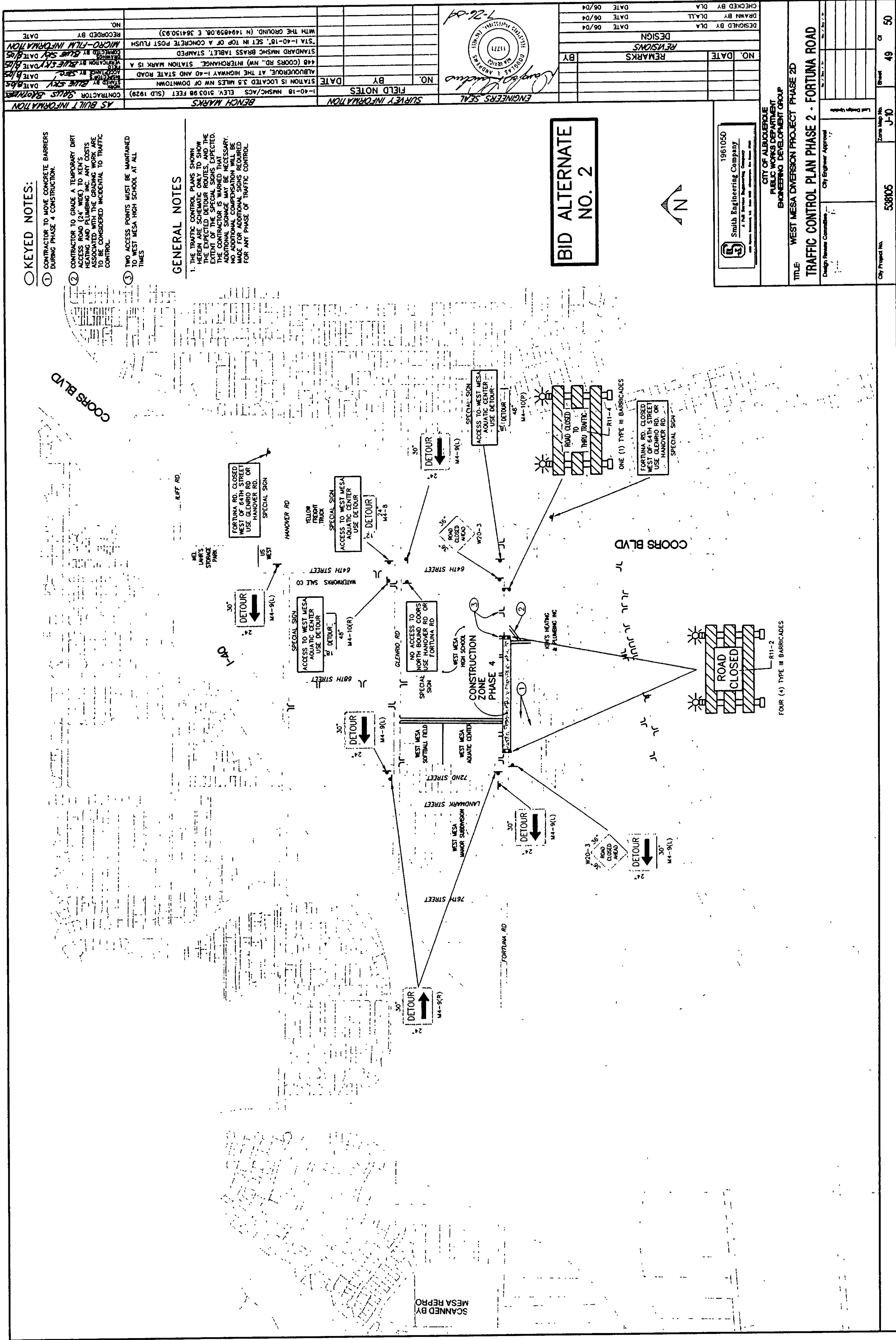
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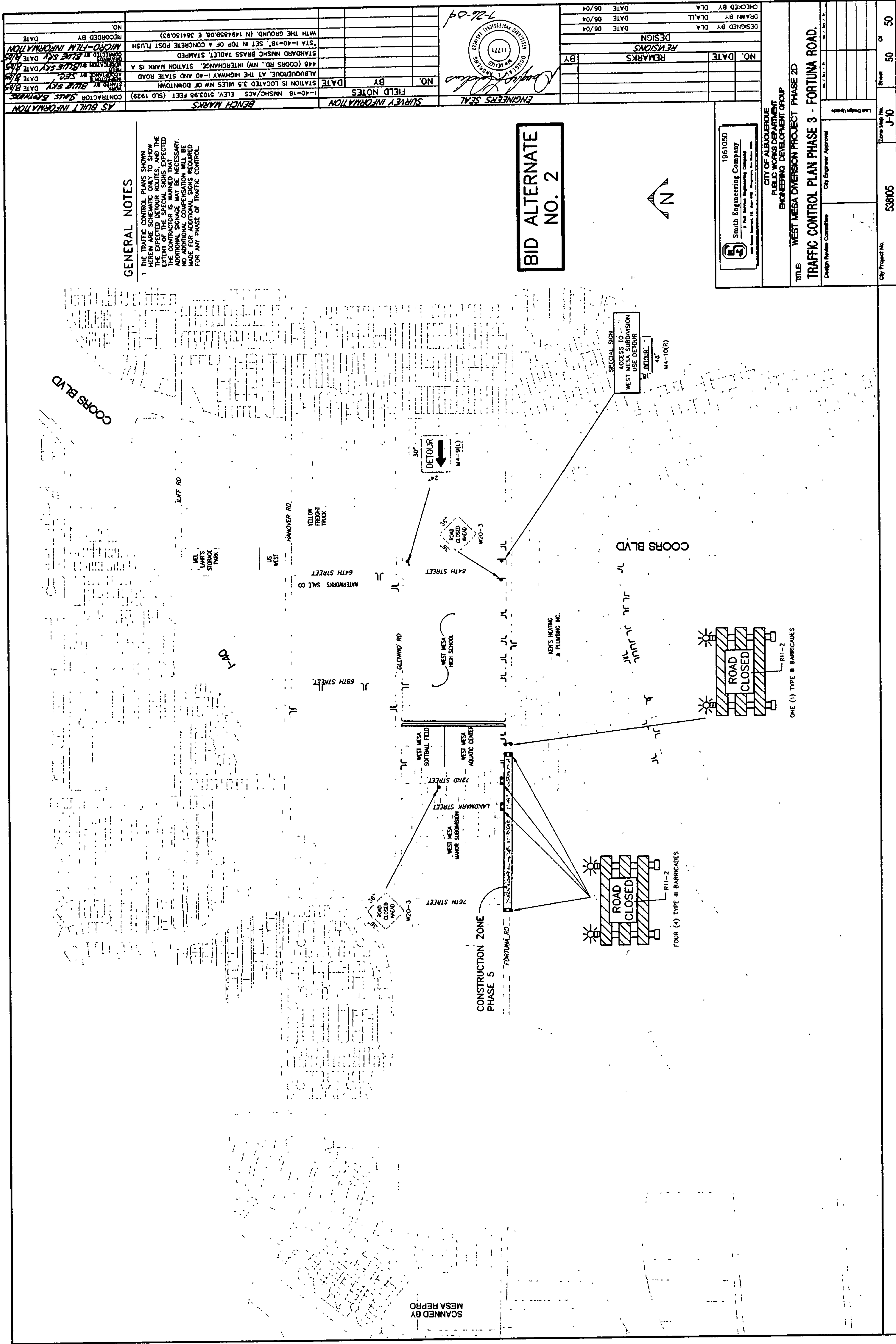
City Project No. 538105 Zone Map No. J-10 Sheet 47 of 50



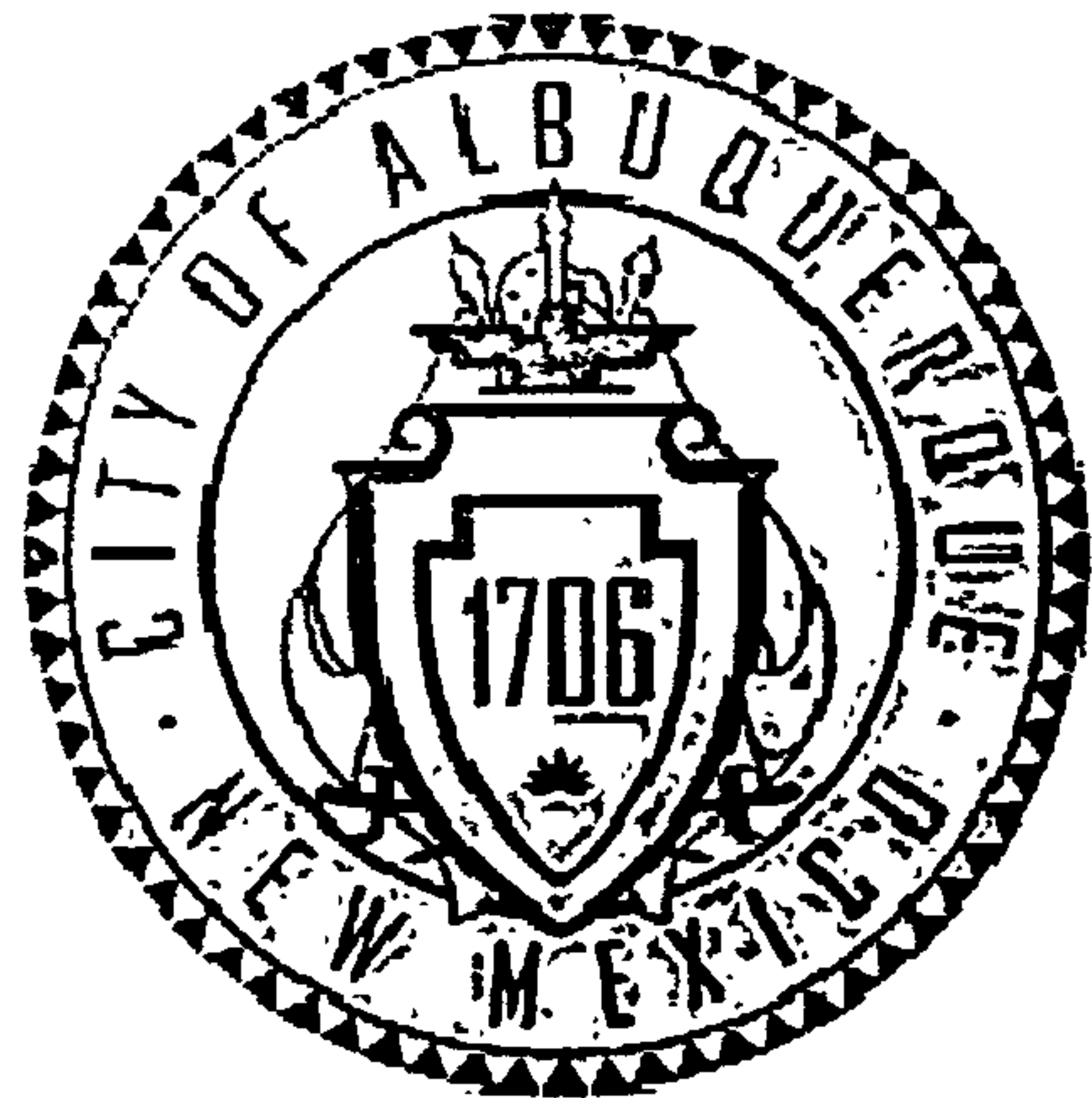
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MESA REPRO

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SCANNED BY
MESA REPRO



FEBRUARY 2009

CEDAR RIDGE POND/PARK

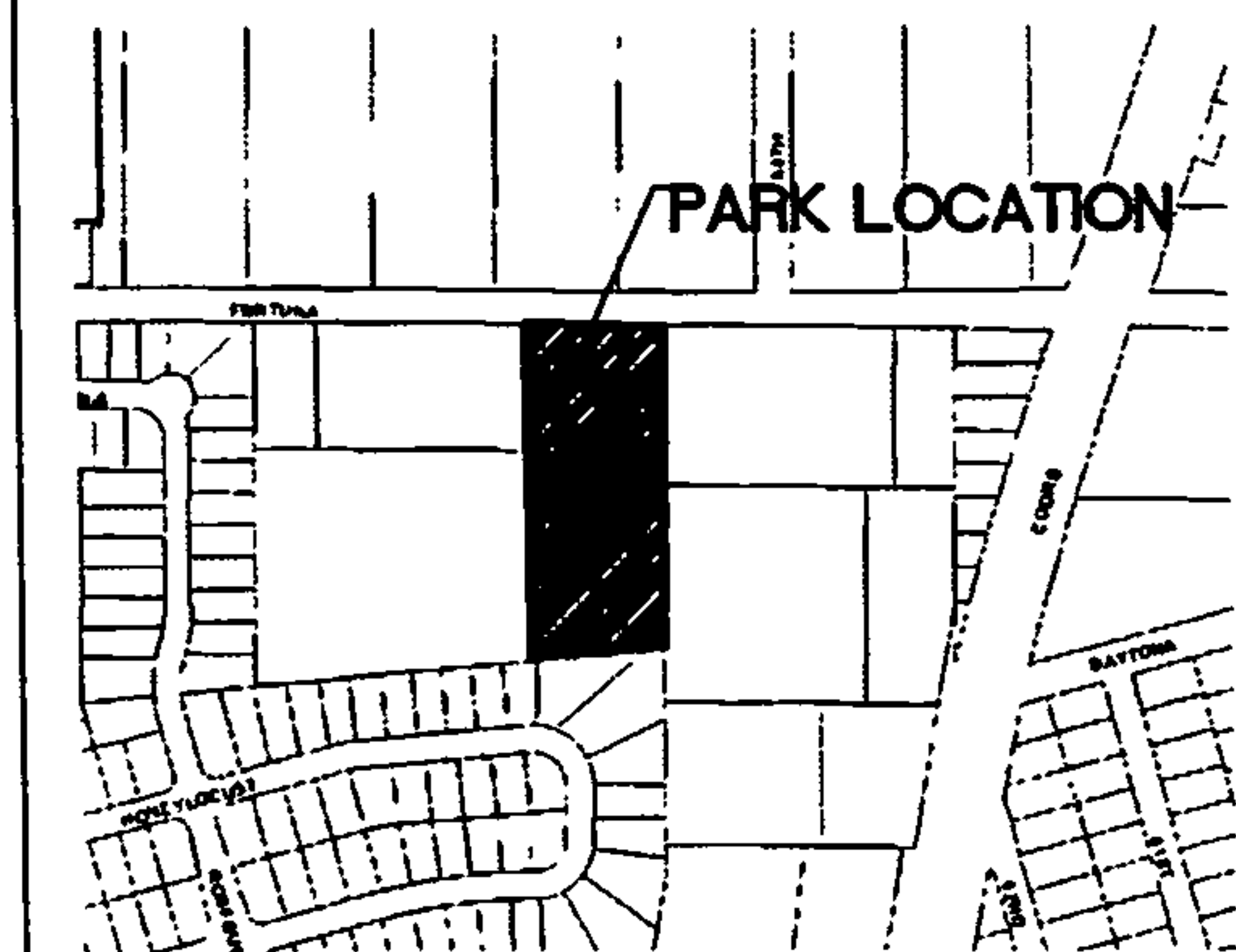
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
PARK DESIGN AND CONSTRUCTION - MANAGING DEPT.
PARK AND RECREATION - OWNER DEPT.

INDEX OF DRAWINGS

TITLE	SHEET NO.
COVER SHEET	L-1 OF 6
GENERAL NOTES	L-2 OF 6
SURVEY INFORMATION	L-3 OF 6
IRRIGATION PLAN	L-4 OF 6
PLANTING GRADING	L-5 OF 6
PROJECT INFORMATION FORM	L-6 OF 6

TURF AREA: 1.64 ACRES
PROPERTY ADDRESS: 6700 FORTUNA NW
LEGAL DESCRIPTION: A CERTAIN PARCEL OF LAND BEING THE
EASTERLY 230 FEET OF LOT 1-C, TRACT S-2, ATRISCO BUSINESS
PARK, ALBUQUERQUE, NEW MEXICO.

CONSULTANTS



VICINITY MAP ZONE MAP J10 N.T.S.

☐ FINAL FOR CONSTRUCTION
DATE: FEB. 2009

CEDAR RIDGE POND/PARK

PROJECT# 538105

RECORD DRAWINGS
DATE: 09/23/09

RECORD DRAWINGS SEPTEMBER, 2009

This set of Record Documents consists of corrected plans showing the reported location of the work, conforming to the construction records provided by the Contractor. While the information submitted by the Contractor and incorporated by the Landscape Architect into the Record Documents is assumed to be reliable, the Landscape Architect has not verified the accuracy and/or completeness of the information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Those relying on these Record Documents are advised to obtain independent verification of their accuracy before applying it for any purpose.

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE
LANDSCAPE ARCHITECT'S SEAL		APPROVALS		ENGINEER	DATE	*****	
		DIR. CHAIRMAN				APPROVED FOR CONSTRUCTION	
		TRANSPORTATION					
		WATER/WASTEWATER					
		HYDROLOGY					
		PARKS & RECREATION					
		CONSTR. COORD.				City Engineer Date	
		ENV. HEALTH					
City Project Number				Sheet		Of	
538105				L-1		6	

GENERAL NOTES

1. FIVE (5) WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR WILL SUBMIT A DETAILED CONSTRUCTION SCHEDULE TO THE CITY CONSTRUCTION COORDINATION DIVISION. TWO (2) DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR WILL OBTAIN A BARRICADING PERMIT FROM THE CONSTRUCTION COORDINATION DIVISION. CONTRACTOR SHALL NOTIFY BARRICADE ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION REFER TO SECTION 19 OF SPECIFICATIONS.
2. THE CONTRACTOR WILL NOTIFY THE FIELD ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK, IN ORDER THAT THE CITY SURVEY SECTION MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. THE CONTRACTOR WILL NOTIFY THE ENGINEER IF A MONUMENT IS DISTURBED. REPLACEMENT WILL BE DONE ONLY BY THE CITY OF ALBUQUERQUE SURVEY SECTION AT THE CONTRACTOR'S EXPENSE. WHEN A CHANGE IS MADE IN THE FINISHED ELEV. OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR WILL, AT HIS OWN EXPENSE, HAVE THE CITY SURVEY SECTION ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO SECTION 4 OF SPECIFICATIONS.
3. THE SPECIFICATIONS USED FOR THIS PROJECT ARE THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION, UPDATE NO. 7.
4. ALL NEW MANHOLES SHALL BE TYPE "E" (COA DWG. 2102) UNLESS OTHERWISE NOTED ON THE PLANS.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR DISPOSING OF ALL DEBRIS, INCLUDING, BUT NOT LIMITED TO HAZARDOUS WASTE AT DISPOSAL SITES APPROVED BY GOVERNMENTAL AGENCIES REGULATING THE DISPOSAL OF SUCH MATERIALS.
6. ALL WATER VALVE BOXES AND MANHOLES IN THE STREET CONSTRUCTION ARE TO BE ADJUSTED TO FINISH GRADE AND WILL BE MEASURED AND PAID PER EACH.
7. SUBGRADE PREPARATION UNDER SIDEWALKS AND DRIVE PADS, AND SUBGRADE AND SUBBASE PREPARATION UNDER CURB AND GUTTER IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF SUCH, AND NO DIRECT PAYMENT SHALL BE MADE FOR THOSE ITEMS OF WORK.
8. THE CONTRACTOR WILL REPLACE ANY STRIPING THAT HAS BEEN RUINED OR REMOVED IN THE COURSE OF CONSTRUCTION.
9. ALL EXCAVATION WILL BE GOVERNED BY FEDERAL, STATE AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
10. ALL SIGNS AND CODING WILL BE IN ACCORDANCE WITH THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" CURRENT EDITION PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION.
11. THE CONTRACTOR IS TO EXERCISE CARE TO AVOID DISTURBING ANY EXISTING UNDERGROUND UTILITIES. IT WILL BE HIS RESPONSIBILITY TO COORDINATE WITH THE UTILITY COMPANIES IN ORDER TO PREVENT ANY SERVICE DISRUPTION. SEE SECTION 18 "UTILITIES", CITY OF ALBUQUERQUE, STANDARD SPECIFICATIONS FOR CONTRACTOR REQUIREMENTS.
12. WHEN ABUTTING NEW PAVEMENT TO EXISTING INTERSECTING STREETS, SAW CUT EXISTING PAVEMENT TO A STRAIGHT LINE AND AT RIGHT ANGLES AND REMOVE ANY BROKEN OR CRACKED PAVEMENT. NO DIRECT PAYMENT WILL BE MADE FOR SAW CUTTING.
13. ALL GAS VALVES, GAS MANHOLES, ELECTRICAL MANHOLES, TELEPHONE MANHOLES, AND UTILITY POLES WILL BE ADJUSTED TO GRADE BY EACH UTILITY COMPANY. CONTRACTOR WILL COORDINATE THROUGH CITY UTILITY COORDINATOR.
14. WHEN REMOVAL OF EXISTING CURB AND GUTTER OR SIDEWALK IS REQUIRED, REMOVE BACK TO NEAREST SUITABLE JOINT UNLESS OTHERWISE DIRECTED BY THE CITY FIELD ENGINEER.
15. THE CONTRACTOR WILL NOTIFY THE NEW MEXICO ONE CALL SYSTEM 280-1990 TWO (2) WORKING DAYS PRIOR TO COMMENCING WORK IN NEW AREAS.
16. CONTRACTOR WILL MAKE ALL WATER VALVES AND MANHOLES ACCESSIBLE TO THE CITY AT ALL TIMES.
17. CONTRACTOR WILL PLACE BITUMINOUS MATERIAL WITH THE USE OF A LAYDOWN MACHINE WHERE PAVEMENT IS 8 FEET IN WIDTH OR WIDER.
18. ALL SUBGRADE AND SUBBASE MATERIAL ENCOUNTERED IN PAVEMENT REMOVAL AND REPLACEMENT THAT IS DETERMINED BY THE FIELD ENGINEER TO MEET THE SPECIFICATIONS, CAN BE REUSED. HOWEVER, THE MATERIAL WILL BE PROCESSED AND COMPACTED TO MEET MOISTURE CONTENT AND PERCENT COMPACTION REQUIRED BY THE SPECIFICATIONS.
19. CONTRACTOR WILL NOT PAVE OVER ANY SURFACE FEATURE, I.E., GAS VALVE, MANHOLE COVER, ETC. WITHOUT PRIOR APPROVAL FROM THE CITY FIELD ENGINEER.
20. CONTRACTOR WILL CONFINE HIS WORK WITHIN THE CONSTRUCTION EASEMENT LIMITS AND/OR RIGHT-OF-WAY, OR PROVIDE COPIES OF AGREEMENTS WITH ADJACENT LANDOWNERS TO THE CITY OF ALBUQUERQUE.
21. ALL WATER VALVES AND FIRE HYDRANTS REMOVED TO BE SALVAGED AND RETURNED TO THE C.O.A.
22. MINIMUM BOTTOM WIDTH OF TRENCHES FOR RIGID PIPE SHALL BE EQUAL TO THE OUTSIDE DIAMETER PLUS 16 INCHES. BEDDING MATERIAL SHALL BE CLASS II, III, OR IV UNLESS OTHERWISE SPECIFICALLY NOTED ON THE PLANS.
23. MINIMUM BOTTOM WIDTH OF TRENCHES FOR NON-RIGID PIPE SHALL BE EQUAL TO THE OUTSIDE DIAMETER PLUS 12 INCHES. BEDDING MATERIAL SHALL BE CLASS I, II, OR III.
24. THE CONTRACTOR AGREES TO TAKE NECESSARY SAFETY PRECAUTIONS AS REQUIRED BY FEDERAL, STATE AND LOCAL AUTHORITIES TO PROTECT PEDESTRIAN AND VEHICULAR TRAFFIC IN THE CONSTRUCTION AREA, WHICH INCLUDE BUT ARE NOT LIMITED TO: MAINTAINING ADEQUATE WARNING SIGNS, BARRICADES, LIGHTS, GUARD FENCES, WALKS AND BRIDGES.
25. ALL STRUCTURAL CONCRETE WILL BE 3000 PSI UNLESS OTHERWISE NOTED ON PLANS.
26. ALL REINFORCING STEEL WILL BE GRADE 60.
27. ALL EXPOSED EDGES ON CAST-IN-PLACE CONCRETE STRUCTURES WILL HAVE A 1" CHAMFER UNLESS OTHERWISE NOTED.
28. ALL SPLICES IN REINFORCING STEEL TO BE 2-FOOT 6-INCH MINIMUM UNLESS OTHERWISE NOTED.
29. PRIOR TO CONSTRUCTION, THE CONTRACTOR WILL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL CONFLICTING UTILITIES. SHOULD A CONFLICT EXIST BETWEEN THE FIELD INFORMATION AND THE PLANS, THE CONTRACTOR WILL NOTIFY THE FIELD ENGINEER SO THE CONFLICT CAN BE RESOLVED WITH MINIMUM AMOUNT OF DELAY.
30. THE REPLACEMENT OF THE EXISTING UTILITIES AND THE INSTALLATION OF NEW UTILITY LINES WILL BE COMPLETED IN ADVANCE OF STARTING THE PAVEMENT WORK. TEMPORARY PAVEMENT WILL BE PLACED IN ALL TRENCHES REQUIRED FOR THE UTILITY REPLACEMENTS IN THOSE AREAS THAT MUST MAINTAIN TRAFFIC UNTIL THE FINAL PAVEMENT WORK STARTS IN EACH AREA. TEMPORARY STRIPING SHALL BE THE CONTRACTOR'S RESPONSIBILITY. MAINTENANCE OF THE TEMPORARY PAVING AND STRIPING WILL BE AT THE CONTRACTOR'S EXPENSE.
31. TACK COAT FOR SURFACE COURSE REQUIREMENTS WILL BE DETERMINED BY THE FIELD ENGINEER.
32. THE CONTRACTOR WILL CONTACT THE CITY OF ALBUQUERQUE TRAFFIC DIVISION 857-8025, ONE (1) WEEK IN ADVANCE OF ANY CHANGES REQUIRED IN THE TRAFFIC SIGNALIZATION OF THIS PROJECT. ALL WORK ASSOCIATED WITH NEW TRAFFIC SIGNALIZATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
33. ALL NEW STREET PAVING, DRIVEWAYS, SIDEWALKS, AND CURB AND GUTTERS, ABUTTING EXISTING AREAS SHALL MATCH THE ELEVATION OF THOSE AREAS.
34. PERMANENT PAVEMENT STRIPING AND MARKINGS WILL BE PLACED BY THE CONTRACTOR. ROAD SHALL NOT BE OPENED TO TRAFFIC UNTIL IT IS STRIPED. ALL STRIPING, PAVEMENT MARKINGS INCLUDING CROSSWALKS, ARROWS AND LINE MARKINGS ARE TO BE CONSTRUCTED OF HOT PLASTIC OR COLD PLASTIC IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
35. ALL EXCAVATED MATERIAL THAT IS NOT REQUIRED TO BE REUSED MUST BE REMOVED FROM THE PROJECT AREA WITHIN FOUR DAYS OF EXCAVATION. SPOIL PILES WILL BE ALLOWED ONLY AS DIRECTED BY THE CITY FIELD ENGINEER.
36. THE CONTRACTOR WILL COORDINATE THE CONSTRUCTION ACTIVITIES WITH ALL OTHER CONTRACTORS AND UTILITY COMPANIES WORKING IN THE SAME AREA. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE THEIR ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCE CAUSED BY UTILITY COMPANY WORK CREWS. A CONTRACT EXTENSION MAY BE ALLOWED AS DELINEATED IN CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS.
37. ALL CONSTRUCTION EASEMENTS ON PRIVATE PROPERTY WILL BE OBTAINED BY THE CITY OF ALBUQUERQUE PRIOR TO THE BEGINNING OF CONSTRUCTION.
38. EXISTING MEDIAN CURB AND GUTTER AND STANDARD CURB AND GUTTER, NOT DISTURBED BY CONTRACTOR, BUT OUT OF ALIGNMENT, DISPLACED VERTICALLY, BADLY BROKEN AND/OR DETERIORATED, WILL BE REPLACED AS DIRECTED BY THE FIELD ENGINEER AND PAID FOR AT CONTRACT UNIT PRICES.
39. ALL TRAFFIC CONTROL DEVICES REQUIRED FOR DRIVEWAY CLOSURES, UTILITY CONSTRUCTION OR FOR OTHER REASONS AND NOT SHOWN ON THE SIGNING PLANS WILL BE FURNISHED BY THE CONTRACTOR AND WILL BE PAID AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS AND BID PROPOSAL. PRIOR TO PLACING THE TRAFFIC CONTROL DEVICES, THE CONTRACTOR WILL NOTIFY THE AFFECTED OWNERS IN ACCORDANCE WITH THE SPECIFICATIONS. CONTRACTOR MUST MAKE PROVISIONS TO PROVIDE ACCESS TO PROPERTIES. REFER TO SECTION 19 OF THE SPECIFICATIONS.
40. ALL UTILITY LINES WHICH ARE NOT SPECIFICALLY DESIGNATED TO BE REMOVED AND REPLACED ON THE PLANS, WILL BE MAINTAINED IN SERVICE. SHORING, SHEETING AND OTHER MEANS OF SUPPORT SHALL BE EMPLOYED BY THE CONTRACTOR TO PREVENT DAMAGE OR LOSS OF THESE EXISTING UTILITIES AND THESE SHORING, SHEETING AND SUPPORTS ARE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF CURB AND GUTTER, OR OTHER ADEQUATE SUPPORTS WILL BE USED FOR TEMPORARY SUPPORT OF ALL UTILITY LINES WHICH CROSS THE TRENCH. ANY DAMAGE TO EXISTING UTILITIES WILL PROMPTLY BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR WILL NOTIFY THE ENGINEER IMMEDIATELY OF ANY SIGNIFICANT DEVIATION OF EXPOSED UTILITIES FROM THE LOCATIONS SHOWN ON THE PLANS SO THAT CONFLICTS CAN BE RESOLVED IN A TIMELY MANNER.

41. THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ANY DAMAGE TO EXISTING COA INFRASTRUCTURE (C & G, PAVING, ETC.) DURING CONSTRUCTION, APART FROM THOSE SECTIONS INDICATED FOR REMOVAL ON THE PLANS, AND WILL REPAIR OR REPLACE SAME AT HIS OWN EXPENSE. HE WILL SUITABLY PROTECT THE CURB AND GUTTER FROM INCIDENTAL SPLASHING DURING THE TACK COAT APPLICATION AND WILL BE RESPONSIBLE FOR CLEANING SAME AT HIS OWN COST SHOULD SPLASHING OCCUR.
42. ALL INTERFERING PORTIONS OF ABANDONED UTILITY LINES WHICH ARE EXPOSED AS A RESULT OF CONSTRUCTION WILL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
43. STATIONS OF STORM DRAIN INLETS ARE TO THE CENTER OF GRATE. ALL STORM DRAIN INLETS WILL BE TYPE "A" UNLESS OTHERWISE NOTED ON THE PLANS.
44. SHORING COSTS WILL BE CONSIDERED INCIDENTAL TO THE TRENCH AND BACKFILL COSTS.
45. THE CONTRACTOR WILL BE RESPONSIBLE FOR SECURING NPDES PERMITS REQUIRED BY APPLICABLE CITY, STATE, AND FEDERAL REGULATIONS.
46. ALL STORM DRAIN AND CONNECTOR PIPE WILL BE CLASS IV REINFORCED CONCRETE PIPE UNLESS OTHERWISE NOTED ON THE PLANS.
47. THE TERM REMOVE USED IN THIS PLAN SET INCLUDES THE DISPOSAL OF SAID MATERIAL IN ACCORDANCE WITH CITY OF ALBUQUERQUE SPECIFICATIONS, LATEST EDITION.
48. CONTRACTOR WILL SURVEY AND LOG EXISTING ELEVATIONS OF CURB-AND-GUTTER, SIDEWALK, AND PAVEMENT WHICH WILL BE REMOVED FOR CONSTRUCTION OF IMPROVEMENTS. CONTRACTOR WILL REPLACE REMOVED CURB-AND-GUTTER, SIDEWALK, DRIVE PADS, AND PAVEMENT TO ELEVATIONS PRIOR TO REMOVAL UNLESS OTHERWISE INDICATED ON THE PLANS.
49. CONTRACTOR WILL CONSTRUCT TEMPORARY ASPHALT PAVEMENT AS DIRECTED BY THE FIELD ENGINEER TO PROVIDE ACCESS TO LOCAL BUSINESS, ETC. TEMPORARY PAVEMENT SHALL BE REMOVED AND DISPOSED OF PRIOR TO PLACEMENT OF FULL WIDTH PAVEMENT SECTION. TEMPORARY PAVING SHALL BE PER COA STD. DWG. 2415 AND PAID FOR PER COA STD. SPECIFICATIONS.
50. ALL CLASSES OF SEEDING SHALL BE DRY LAND MIX PLACED AT 15 LBS/1000 S.F. WITH FERTILIZER 21-12-12 PLACED AT 5 LBS/1000 S.F.
51. ALL ASPHALTIC CONCRETE SHALL BE MINIMUM 1800 LB. STABILITY AND COMPACTED TO 95% MODIFIED MARSHALL DENSITY UNLESS OTHERWISE NOTED ON THE PLANS.
52. ANY WORK OCCURRING WITHIN AN ARTERIAL ROADWAY REQUIRES TWENTY-FOUR (24) HOUR CONSTRUCTION.
53. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.850 SUBPART P.
54. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TIMING AND COORDINATION OF WATER SHUTOFF AT LEAST SEVEN (7) WORKING DAYS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT THE WATER SYSTEMS DIVISION, 857-8200, TO INITIATE IMPLEMENTATION OF THE NON-PRESSURIZED CONNECTION PLAN.
55. FOR STORM DRAIN CONSTRUCTION, RCP PIPE JOINTS SHALL NOT BE GROUTED PRIOR TO FINAL INSPECTION. FINAL INSPECTION WILL DETERMINE JOINTS TO BE GROUTED FOR FINAL ACCEPTANCE OF THE CONSTRUCTION.
56. CONTRACTOR SHALL MAINTAIN A GRAFFITI-FREE WORK SITE. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL GRAFFITI FROM EQUIPMENT, WHETHER PERMANENT OR TEMPORARY.
57. CONTRACTOR SHALL ERECT TEMPORARY CHAIN LINK CONSTRUCTION FENCE. SUCH FENCE SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE CONSTRUCTION PERIOD AND REMOVED ONLY UPON FINAL ACCEPTANCE OF THE PROJECT BY THE CITY.
58. QUANTITIES PROVIDED ON THE PLANS ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. PLANS SHALL TAKE PRECEDENCE IN ALL CASES.

RECORD DRAWINGS SEPTEMBER, 2009

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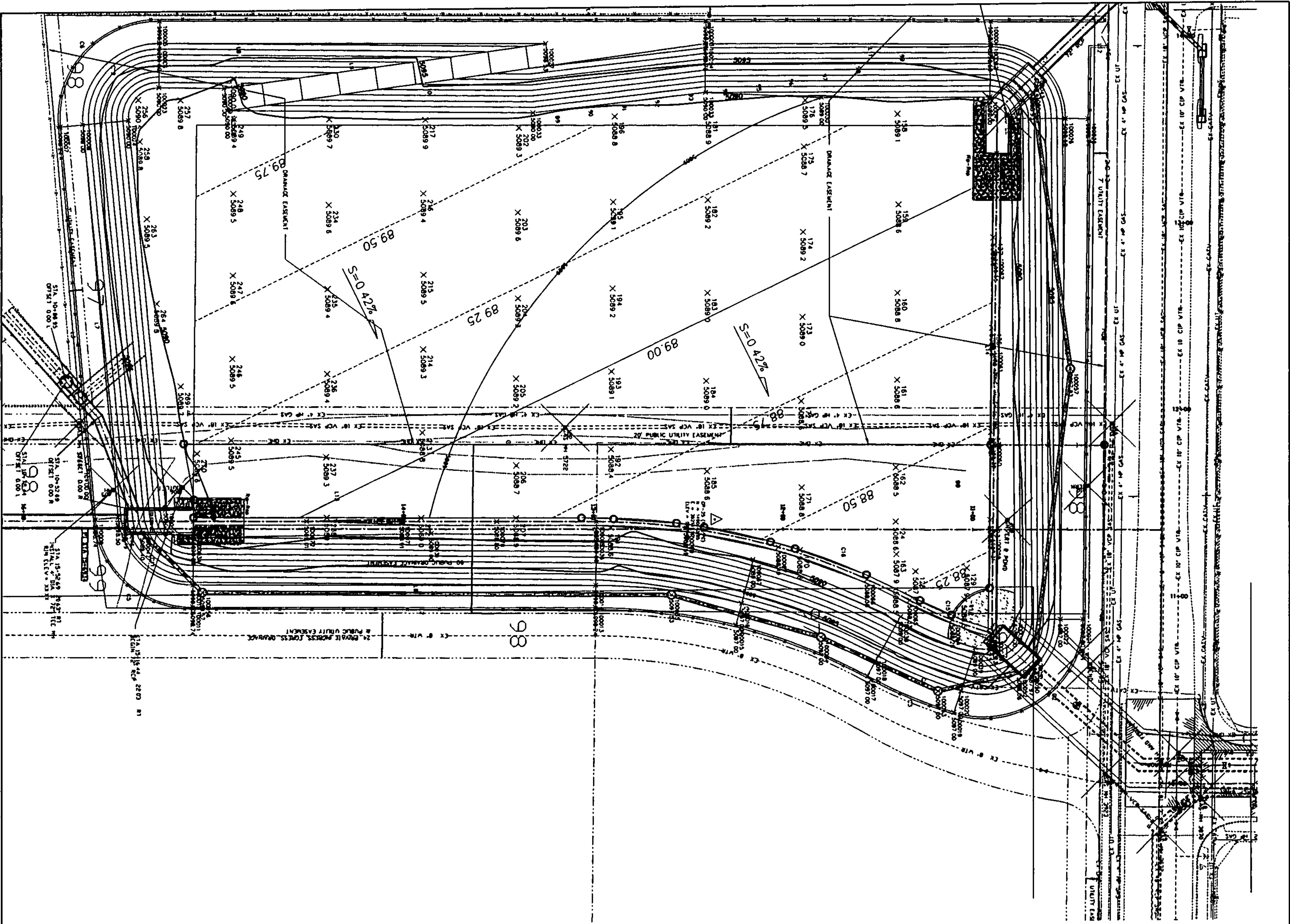
CITY OF ALBUQUERQUE PARK DESIGN AND CONSTRUCTION DIVISION DEPARTMENT OF MUNICIPAL DEVELOPMENT	
CEDAR RIDGE POND/PARK GENERAL NOTES	
Design Review Committee	City Engineer Approval
City Project No. 538105	Zone Map No. J-10
Sheet L-2	OF 6

RECORD DRAWINGS DATE: 09/23/09

PROJECT# 538105

CEDAR RIDGE POND/PARK

☐ FINAL FOR CONSTRUCTION DATE: FEB. 2009



THIS SURVEY WAS PERFORMED BY REX J. VOGLER
NOTE: INFORMATION ON THIS SHEET IS FOR REFERENCE ONLY.

RECORD DRAWINGS SEPTEMBER, 2009
This set of Record Drawings consists of the final design of the project, as approved by the City of Albuquerque. The information provided by the Contractor, while the information submitted by the Contractor, and the information provided by the City of Albuquerque, shall not be responsible for any errors or omissions which may be incorporated herein as a result. Those relying on the information provided herein shall be responsible for independent verification of their accuracy before applying it for any purpose.

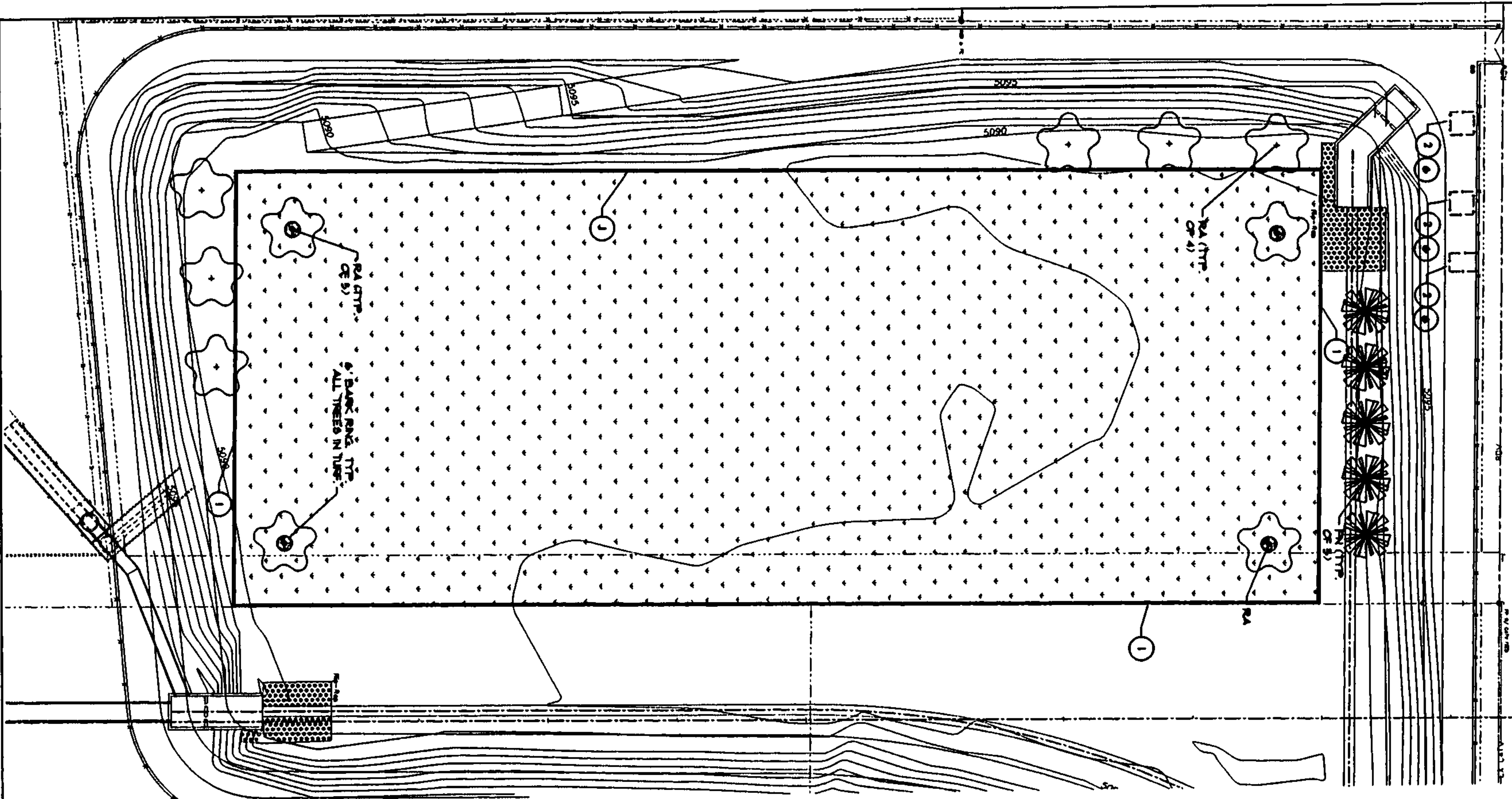
 CITY OF ALBUQUERQUE PARK DESIGN AND CONSTRUCTION DIVISION CEDAR RIDGE POND/PARK SURVEY INFORMATION		 Landscape Architects		 0 15' 30' 60' 90' SCALE: 1" = 30'	
DESIGNED BY GM DATE 2/20/09		ARCHITECTURAL SEAL		SURVEY INFORMATION	
DRAWN BY GM/WM DATE 2/20/09				FIELD NOTES	
CHECKED BY GM DATE 2/20/09				NO. BY DATE	
REVISIONS		REMARKS		BENCH MARKS	
NO. DATE		BY		AS-BUILT INFORMATION	
DESIGNED BY GM DATE 2/20/09				CONTRACTOR	
DRAWN BY GM/WM DATE 2/20/09				WORK STOPPED BY DATE	
CHECKED BY GM DATE 2/20/09				INSPECTOR'S ACCEPTANCE BY DATE	
				FIELD VERIFICATION BY DATE	
				DRAWING CORRECTED BY DATE	
				MICRO-FILM INFORMATION	
				RECORDED BY DATE	
				NO.	

PLANT SCHEDULE				
CODE	COTTON NAME	BOTANICAL NAME	QUANTITY	CONDITION
RA	Raywood Ash	Fraxinus omgearpa Raywood	BASE BID: 4	BBS
PA	Autumn Pine	Pinus nigra	ALTERNATE # 6	BBS
			ALTERNATE # 5	BBS
1/499 SQUARE FEET (14.4 ACRES)				

PLANTING NOTES

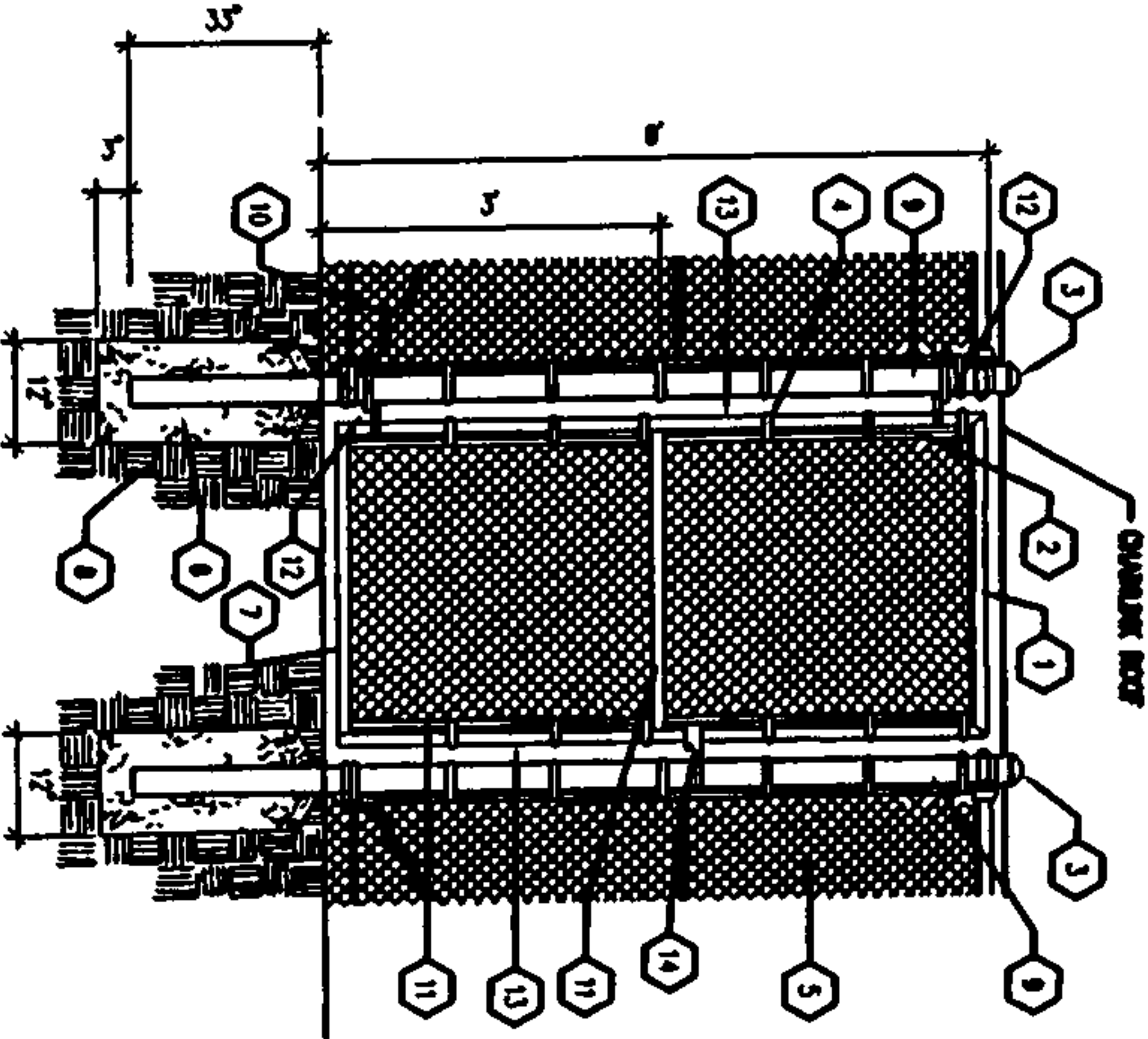
- IN CASE OF DISCREPANCY IN PLANT QUANTITIES SHOWN ON THE PLANT LIST AND THOSE SHOWN ON THE PLANTING PLAN, THE QUANTITIES SHOWN ON THE PLAN SHALL GOVERN. CONSTRUCTION SHALL BE BASED ON THE QUANTITIES SHOWN ON THE PLAN. NO ADJUSTMENT SHALL BE MADE FOR ANY DISCREPANCIES IN QUANTITIES BETWEEN THE PLANTING PLAN AND THE PLANT LIST.
- IF THERE IS A DISCREPANCY IN THE FIELD OR NURSERY BETWEEN THE QUANTITIES SHOWN ON THE PLANTING PLAN AND THE PLANT LIST, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISCREPANCY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISCREPANCY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISCREPANCY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISCREPANCY.
- THREE SHALL BE PLANTED PER CITY OF ALBUQUERQUE STANDARD DETAIL 7713 THREE IN THREE.
- FOUR TREES IN THREE AREA SHALL BE INCLUDED IN BASE BID. PURCHASE AND INSTALLATION OF ADDITIONAL ELEVEN TREES OUTSIDE THREE AREA SHALL BE INCLUDED IN ADDITIVE ALTERNATE 2.

- ### CONSTRUCTION KEYED NOTES
- CONSTRUCT 4" DIA. CONCRETE POSTS. INSTALL TOP OF POSTS 2' ABOVE TOP OF EXISTING ADJACENT FINISH GRADE. INSTALL PER COA STANDARD DRAWING 7716.
 - INSTALL 8" TALL CHAIN LINK FENCE AROUND IRRIGATION EQUIPMENT. FENCE SHALL BE ONE EQUIPMENT WITHIN 4' CLEARANCE. INSTALL PER DETAIL B, THIS SHEET.
 - NOT USED.
 - PARK SIGN LOCATION.
 - NOT USED.
 - INSTALL CHAIN LINK ROOF OVER ENCLOSURE.



A 8' HT. X 4' WIDE CHAINLINK SWING GATE

LEGEND	
CHAINLINK SWING GATE	CHAINLINK SWING GATE
8' HT. X 4' WIDE	8' HT. X 4' WIDE



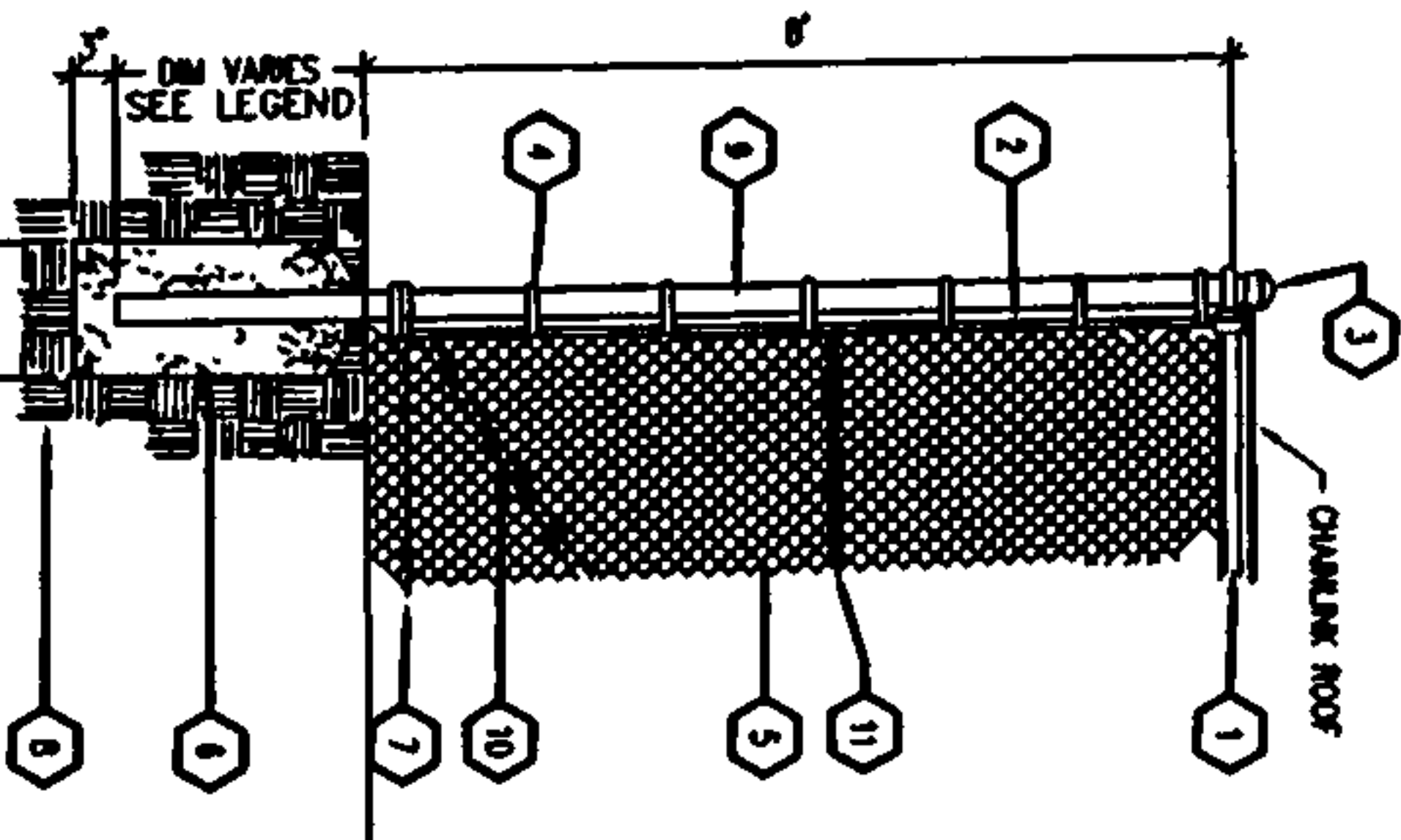
KEYED NOTES

- 1" SQUARE GALVANIZED TUBING TOP RAIL WITH 1/8" THICK WALLS
- 3/4" X 5/8" X 40" STRETCH BAR
- POST TOP CAP
- TENSION BANDS - 15" O.C. MAX
- CONCRETE FOOTING
- 1" SQUARE GALVANIZED TUBING BOTTOM RAIL WITH 1/8" THICK WALLS
- COMPACTED SUBGRADE
- TRUSS / END POST
- COMPRESSION BRACE 1 5/8" O.D.
- 1-1/2" OUTSIDE DIAMETER HOLE RAIL (SS20)
- WELD
- 1" SQUARE GALVANIZED TUBING SIDE POST WITH 1/8" THICK WALLS
- FLUSHING LATCH AND DRIP RAIL

NOTE:
 1. RAILINGS SHALL BE WELDED TO SIDE POSTS. SEE DETAIL (A) 1/2501.
 2. PROVIDE FLUSHING LATCH AND DRIP RAIL. LOOK WILL BE PROVIDED BY OWNER.

B 8' CHAINLINK FENCING

LEGEND	
CHAINLINK FENCING	CHAINLINK FENCING
8' HT. X 4' WIDE	8' HT. X 4' WIDE



KEY NOTES

- 1 - 5/8" OUTSIDE DIA. TOP RAIL (SS20)
- 3/4" X 5/8" X 40" STRETCH BAR
- POST TOP CAP
- TENSION BANDS - 15" O.C. MAX
- 9 GAUGE X 2" WESH FABRIC - KNUCKLE & KNUCKLE BOTH TOP AND BOTTOM.
- CONCRETE FOOTING, 3,000 PSI
- 7 GAUGE BOTTOM TENSION WIRE W/4000 RINGS.
- 95% COMPACTED SUBGRADE.
- CORNER / END POST.
- COMPRESSION BRACE 1 5/8" O.D.
- TRUSS ROD.

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		CITY OF ALBUQUERQUE PARK DESIGN AND CONSTRUCTION DIVISION DEPARTMENT OF MUNICIPAL DEVELOPMENT CEDAR RIDGE POND/PARK PLANTING PLAN	
Design Review Committee	City Engineer Approved	No./Rev./Yr.	No./Rev./Yr.
City Project No.	Zone Map No.	Lost Design Update	Sheet
538105	J-10		L-5 OF 6

RECORD DRAWINGS
 DATE: 09/23/09

PROJECT# 538105

CEDAR RIDGE POND/PARK

☐ FINAL FOR CONSTRUCTION
 DATE: FEB. 2009

