CITY OF ALBUQUERQUE

January 4, 2005

Mr. Shahab Biazar, P.E.
ADVANCED ENGINEERING AND CONSULTING, LLC
4416 Anaheim Ave. NW
Albuquerque, NM 87114

Re: ASRT HEADQUARTERS
15000 Central Avenue SE
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 02/26/2003 and 12/28/2004 (L-23/D11)
Certification dated 12/28/2004

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Dear Shahab,

Based upon the information provided in your submittal received 01/03/2005, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

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

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept. - Hydrology
Development and Building Services

C: Phyllis Villanueva
File

DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: ASRT Headquarters

ZONE ATLAS/DRG. FILE #: L-23 / D11

DRB #: _____ EPC #: _____

WORK ORDER #: _____

LEGAL DESCRIPTION: TRACTS A-1, A-2 AND A-3 CHANT PROPERTY ADDITION, SECTION 26, T.10N., R.4E., N.M.P.M., COUNTY OF BERNALILLO, NM

CITY ADDRESS: 15000 Central Ave. SE

ENGINEERING FIRM: *Advanced Engineering and Consulting, LLC*
ADDRESS: ~~10205 Snowflake Ct. NW~~ 4916 Anaheim Ave N.E.
CITY, STATE: Albuquerque, New Mexico

CONTACT: Shahab Biazar
PHONE: (505) 899-5570
ZIP CODE: 87114

OWNER: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

____	DRAINAGE REPORT
____	DRAINAGE PLAN 1ST SUBMITTAL, REQUIRES TCL OR EQUAL
____	CONCEPTUAL GRADING & DRAINAGE PLAN
____	GRADING PLAN
____	EROSION CONTROL PLAN
X	ENGINEER'S CERTIFICATION (HYDROLOGY)
____	CLOMR / LOMR
____	TRAFFIC CIRCULATION LAYOUT (TCL)
____	ENGINEER'S CERTIFICATION (TCL)
____	ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
____	OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

RECEIVED
JAN 03 2005
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

____	YES
X	NO
____	COPY PROVIDED

DATE SUBMITTED: 12 / 28 / 2004 BY: Shahab Biazar, 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 of the proposed development defines the degree of drainage detail. One or more of the following levels of submittals may be required based on the following:

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

ADVANCED ENGINEERING and CONSULTING, LLC

Consulting
Design
Development
Management
Inspection
Surveying

December 28, 2004

Mr. Bradley L. Bingham, P.E.
Sr. Engineer, Planing Dept.
Development and Building Services
600 Second Street NW
Albuquerque, New Mexico 87102

RE: GRADING CERTIFICATION FOR ASRT HEADQUARTERS (L23/D11)

Dear Mr. Bingham:

This submittal is for certification of the grades for ASRT Headquarters site. The retaining wall and parking layout has been modified. Therefore, a separate plan is submitted to show the as-built location of the all the curbing, inlets, and retaining walls. The as-built location of the improvements are plotted at a darker color, and all the original design are plotted in a lighter color. A copy of the originally approved grading and drainage plan (w/ engineer's stamped date 2/26/04) is enclosed. The site drains to the designed inlets as shown on the approved plan. We are requesting grading and drainage certification as well as Certification of Occupancy.

Please contact me if there are any questions or concerns regarding this submittal.

Sincerely yours,

Shahab Biazar, P.E.

RECEIVED
JAN 03 2005
HYDROLOGY SECTION

4416 Anaheim Ave., N.E., Albuquerque, NM 87113 PH (505) 899-5570 FAX (505) 897-4996 EMAIL AECLLC@aol.com

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

March 18, 2003

Shahab Biazar
10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

RE: Grading and Drainage Plan For ASRT Headquarters (L23-D11) Dated February 26, 2003

Dear Mr. Biazar:

The above referenced drainage plan is approved for Building Permit. The plan had been approved for Site Plan for Building Permit in my February 14, 2003 letter. Please include a copy of the drainage plan in the construction sets prior to signoff by Hydrology. The plat should include the required drainage easements for the two culverts and the floodplain. Prior to release of Certificate of Occupancy the plan will have to be certified by the engineer, and filed plat needs to be submitted. If you have any questions please call me at 924-3982.

Sincerely,

Carlos A. Montoya
City Floodplain Administrator

DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: ASRT Headquarters ZONE ATLAS/DRG. FILE #: L-23 / D11

DRB #: _____ EPC #: *02EPC-01686 / 02EPC-01689 EPC* WORK ORDER #: _____

LEGAL DESCRIPTION: TRACTS A-1, A-2 AND A-3 CHANT PROPERTY ADDITION, SECTION 26, T.10N., R.4E., N.M.P.M., COUNTY OF BERNALILLO, NM

CITY ADDRESS: 15000 Central Ave. SE

ENGINEERING FIRM: *Advanced Engineering and Consulting, LLC* CONTACT: Shahab Biazar
ADDRESS: 10205 Snowflake Ct. NW PHONE: (505) 899-5570
CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87114

OWNER: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1ST SUBMITTAL, REQUIRES TCL OR EQUAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR / LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERTIFICATION (TCL)
- ____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SIA / FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- X S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- X FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- X BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- X GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED
FEB 27 2003
HYDROLOGY SECTION

DATE SUBMITTED: 02 / 26 / 2003 BY: Shahab Biazar, 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 of the proposed development defines the degree of drainage detail. One or more of the following levels of submittals may be required based on the following:

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

ADVANCED ENGINEERING and CONSULTING, LLC

Consulting
Design
Development
Management
Inspection
Surveying

February 26, 2003

Mr. Carlos A. Montoya, P.E.
City Floodplain Administrator
Plaza Del Sol-2nd Floor West
600 2nd Street NW
Albuquerque, NM 87102

RE: Grading and Drainage Plan for ASRT Headquarters L23 / D11

Dear Mr. Montoya:

The following are responses to your letter received dated February 14, 2003:

1. The public drainage easements are shown on the attached exhibits. The easements were established based on the centerline of the arroyos. Actual easements and documents will be prepared at a later time prior to final certification of occupancy.

2. The floodplain easement exhibit for the Tijeras Arroyo is attached as well. Actual easements and documents will be prepared at a later time prior to final certification of occupancy.

3. The details for the grouted riprap are added to the revised grading and drainage plan.

4. The 12-in and 18-in will be placed 2' under the ground and the dirt on top will keep the culverts in place.

Please contact me if there are any questions or concerns regarding this submittal.

Sincerely yours,

Shahab Biazar, P.E.

10205 Snowflake Court N.W., Albuquerque, N.M. 87114 PH (505) 899-5570 FAX (505) 897-4996 EMAIL AECLLC@aol.com

DRAINAGE REPORT
FOR

ASRT HEADQUARTERS
ADDITION & RENOVATION
(15000 Central Ave. SE)

Prepared by:

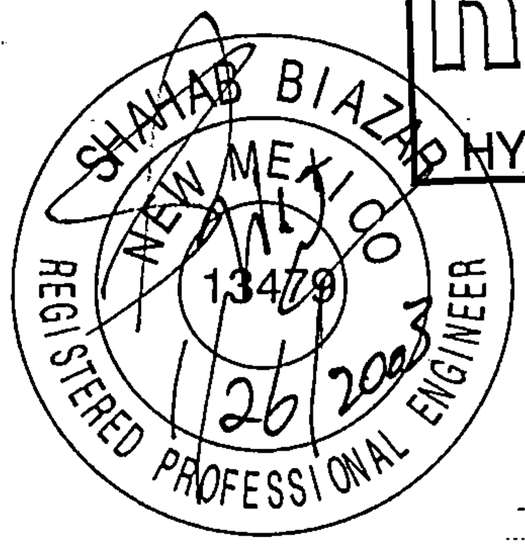
ADVANCED
ENGINEERING
and CONSULTING, LLC

10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

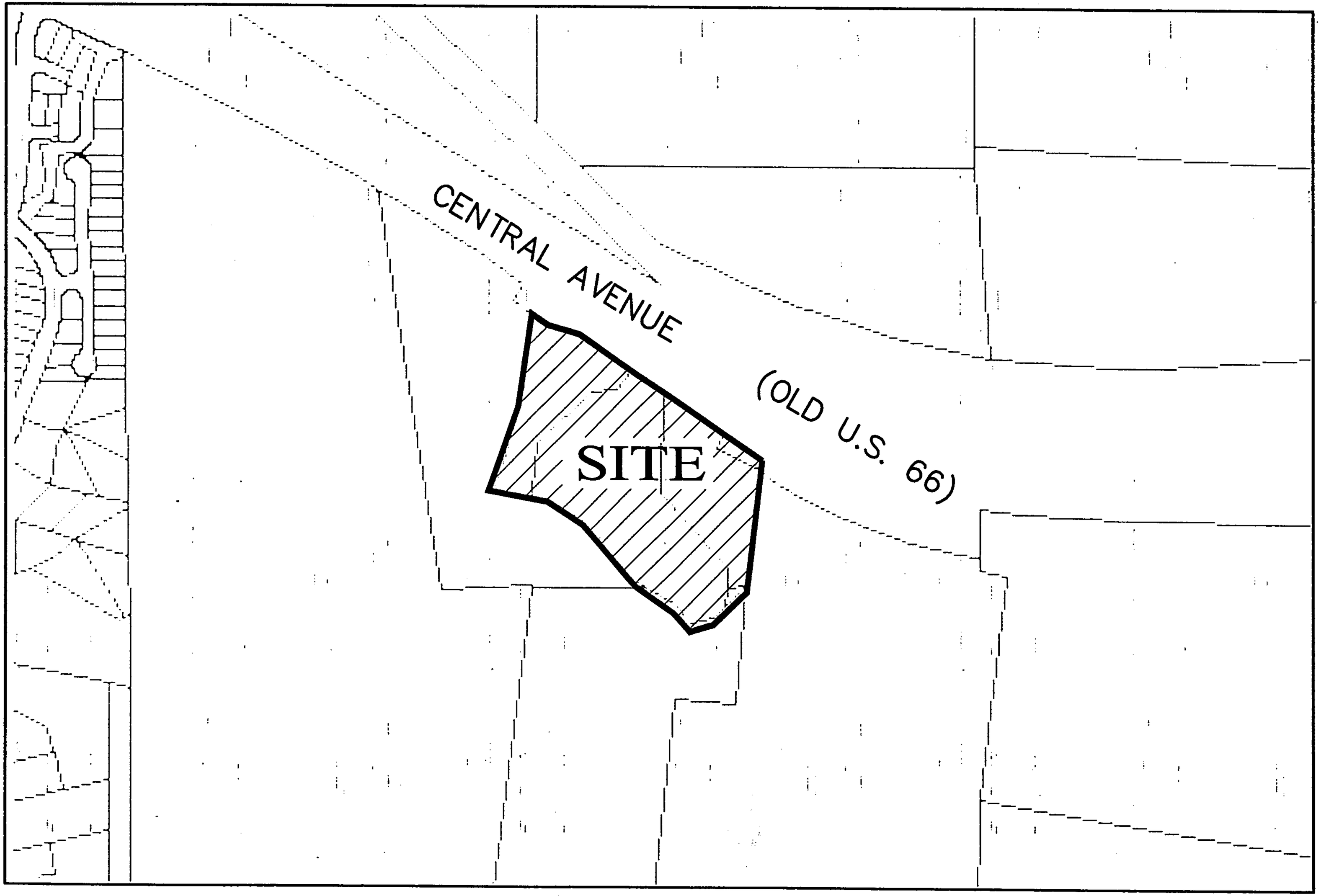
Prepared For:

Masterworks Architects, Inc.
516 Eleventh St. NW 242-1866
Albuquerque, NM 87102-1806

January, 2003



Shahab Biazar
PE NO. 13479



VICINITY MAP:

L-23-Z

Location

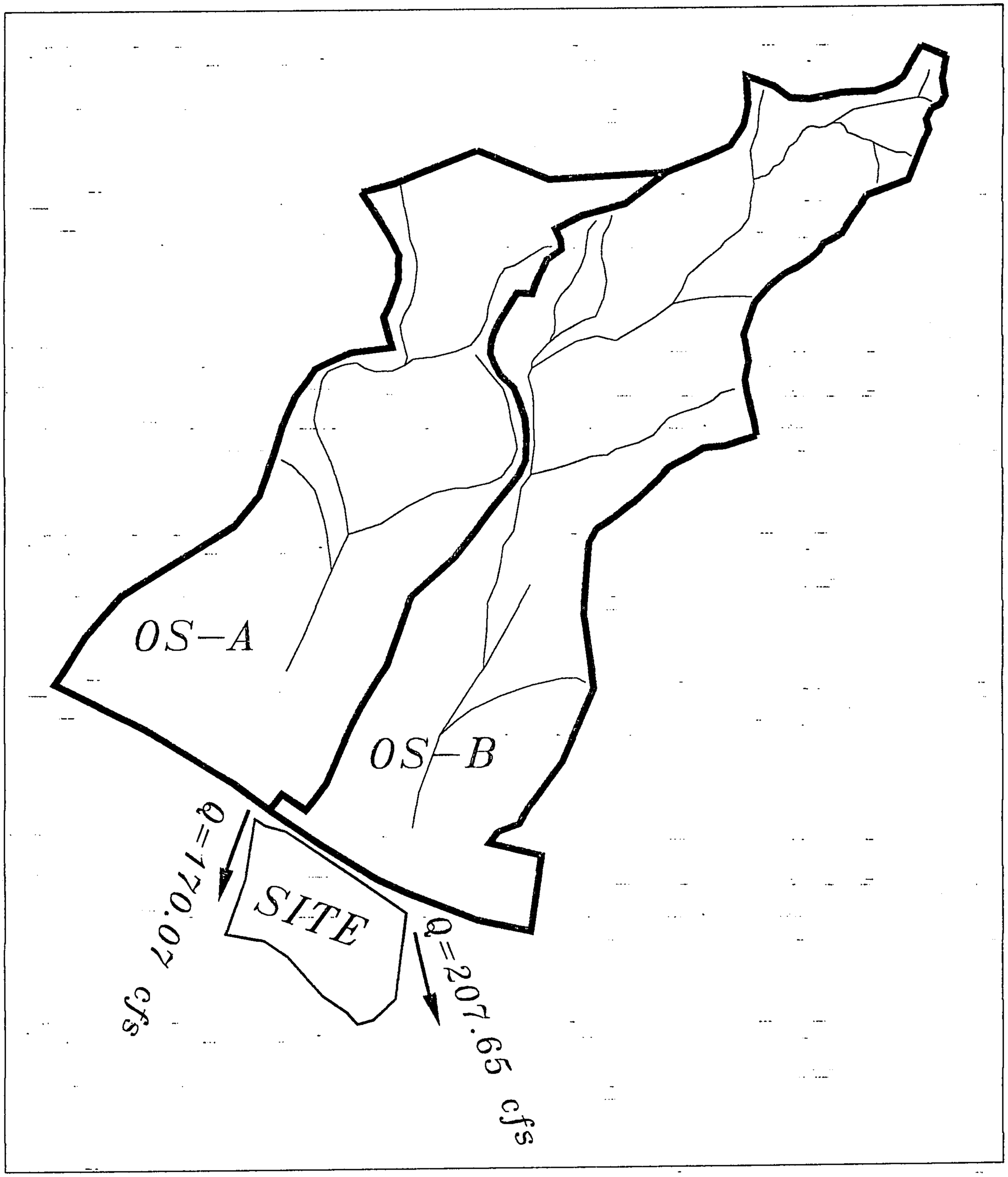
ASRT Headquarters is located at 15000 Central Avenue SE. The site is located along the frontage road east of Tramway Exit and west side of Carnuel Exit. See attached Zone Atlas page number L-23 for exact location. The owners are proposing to add 30,443 sf of building and additional parking spaces to the existing Improvements.

Purpose

The purpose of this drainage report is to present a grading and drainage solution for the proposed sites. We are requesting rough grading approval, site development plan for subdivision purposes, site development plan for building permit, final plat approval, and building permit approval.

Existing Drainage Conditions

The site is partially developed with existing building and parking. The site drains to the existing arroyos to the west and the east side of the property and to Tijeras Arroyo to the south side of the site. A flow 170.07 cfs drains to the arroyo located to the west site of project and a runoff of 207.65 cfs drains to the arroyo located to the east side of the site. See attached basin map which shows the Basins OS-A and OS-B which contribute these arroyos. The runoff from the state



BASIN LAYOUT

CONTRIBUTING BASINS FOR THE ARROYOS TO THE EAST AND THE WEST SIDE OF THE SITE

highway right-of-way (frontage road) for the portion that fronts this property drains to the site form north to south. Southern portion of the site falls within the 100-year floodplain. The approximate floodplain limits are shown on the grading plan. Also see attached floodplain map for the location of the floodplain in relation to the site. Since the site is a lot higher than the floodplain and the existing arroyos, Erosion setbacks will not be required.

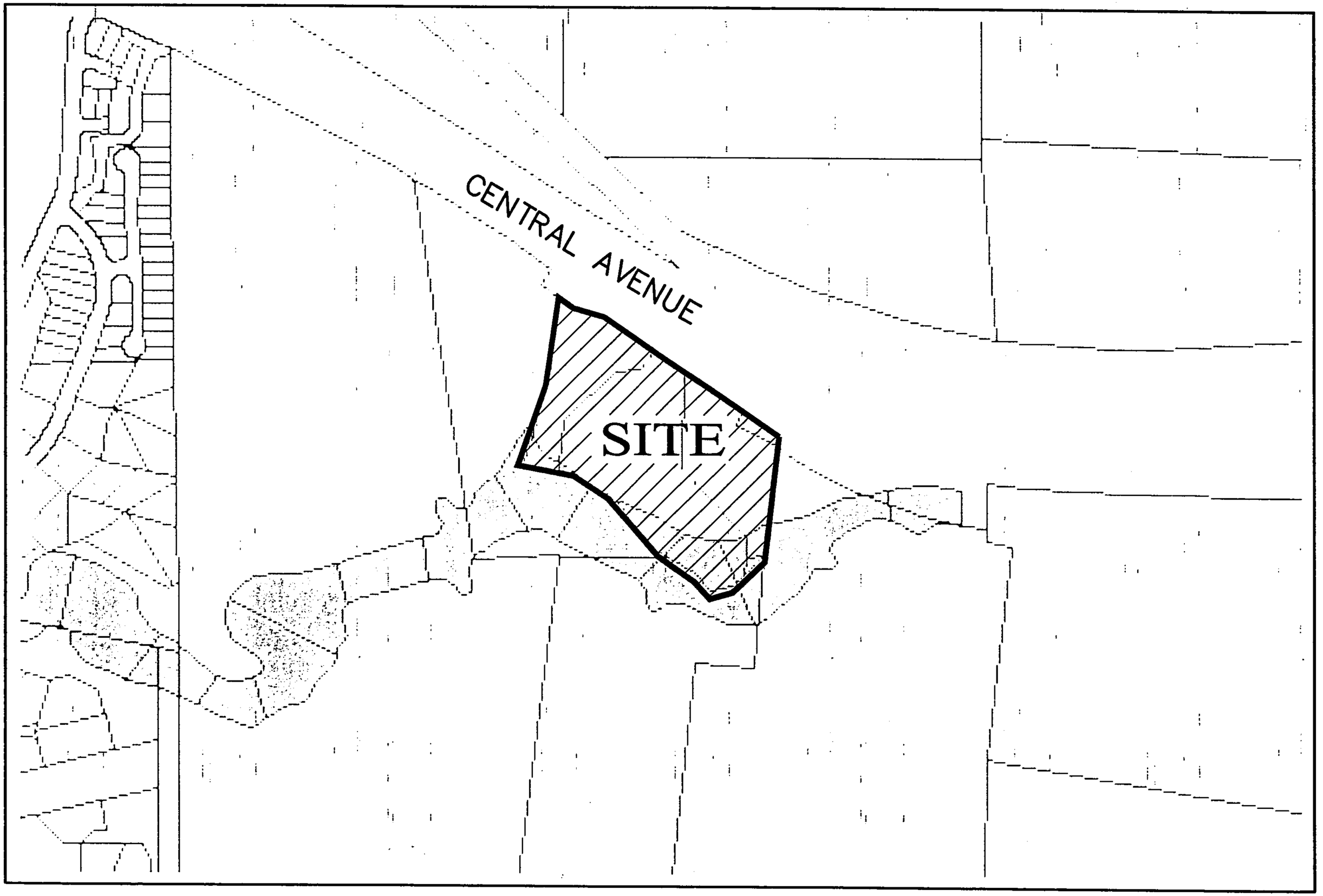
Proposed Conditions and On-Site Drainage Management Plan

The drainage pattern for most part will remain the same. The offsite runoff will continue to drain through this site. The on-site runoff is analyzed under three basins ON-A, ON-B, and ON-C. Basin ON-A drains to the west side of the building to a proposed drop inlet and then discharges to the base of Basin ON-C via an 18" pipe. Basin ON-B drains to the east side of the building to a drop inlet and from there it drains to the base of Basin ON-C via a 12" pipe. Offsite runoff OS-C drains to Basin ON-A and then to Basin ON-C. Offsite runoff

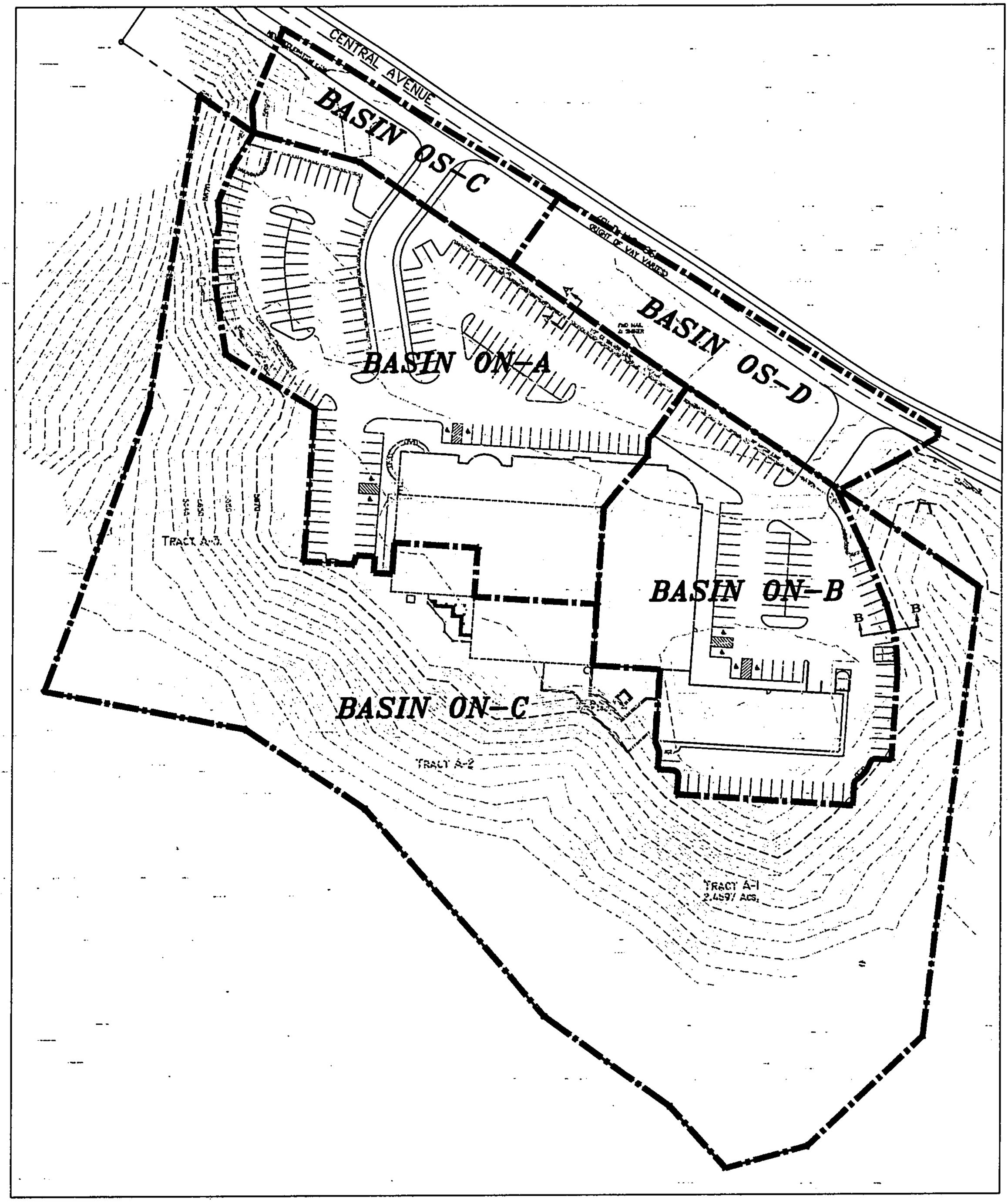
OS-D Drains to Basin ON-B and then to Basin ON-C. Then Basin ON-C drains to Tijeras Arroyo. See attached Basin Layout for the location of the basins in relation to the site.

Calculations

City of Albuquerque, Development Process Manuel, Section 22.2, Hydrology Section, revised January, 1993, was used for runoff calculations.



FIRM MAP: 35001C0378 D & 086 D



BASIN LAYOUT

NTS

RUNOFF CALCULATION RESULTS

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
ON-A	98,614.96	2.2639	0.003537
ON-B	68,124.60	1.5639	0.002444
ON-C	242,939.28	5.5771	0.008714
OS-A	2,844,983.21	65.3118	0.102050
OS-B	3,514,853.32	80.6899	0.126078
OS-C	19,712.37	0.4525	0.000707
OS-D	30,563.72	0.7016	0.001096

EXISTING

BASIN	Q-100 CFS	Q-10 CFS
ON-A	9.09	5.40
ON-B	6.63	4.04
ON-C	12.98	5.01
OS-A	170.07	72.55
OS-B	207.65	85.82
OS-C	2.15	1.39
OS-D	3.32	2.15

PROPOSED

BASIN	Q-100 CFS	Q-10 CFS
ON-A	11.36	7.44
ON-B	7.85	5.14
ON-C	13.32	5.31

PIPE FLOW CAPACITY CALCULATIONS

<u>18" Pipe Flow Capacity Calculation Using Orifice Equation</u>
<u>(Discharge Pipe From The Inlet On The West Side Of The Building)</u>

Orifice Equation: $Q=CA\sqrt{2gh}$

Q = 13.51 cfs (maximum runoff) , Basin ON-A + OS-C (11.36 cfs + 2.15 cfs)

A = 1.767 sf
g = 32.20
h = (80.00-74.00) = 6.00' (maximum head at the pipe)

$Q = 0.60 \times 1.767 \times \sqrt{(2 \times 32.2 \times 6.00)}$
= 20.84 cfs > 13.51 cfs OK

<u>12" Pipe Flow Capacity Calculation Using Orifice Equation</u>
<u>(Discharge Pipe From The Inlet On The East Side Of The Building)</u>

Orifice Equation: $Q=CA\sqrt{2gh}$

Q = 11.17 cfs (maximum runoff), Basin ON-B + OS-D (7.85 cfs + 3.32 cfs)

A = 0.785 sf
g = 32.20
h = (78.25-68.00) = 10.25' (maximum head at the pipe)

$Q = 0.60 \times 0.785 \times \sqrt{(2 \times 32.2 \times 10.25)}$
= 12.10 cfs > 11.17 cfs OK

STORM DROP INLET DRAINAGE CAPACITY

Type 'A' With Sweepers On Both Sides

Area at the grate:

L = 88 ¾" - 2(6"$_{ends}$) - 6"$_{center\ piece}$ - 14(½ $_{middle\ bars}$)
= 63 ¾"
= 5.3125'

W = 25 ½" - 13(½"$_{middle\ bars}$)
= 19"
= 1.5833'

Area = 5.3125' x 1.5833'
= 8.41 ft^2

Effective Area = 8.41- 8.41 (0.5 $_{clogging\ factor}$)
= 4.21 ft^2 at the grate

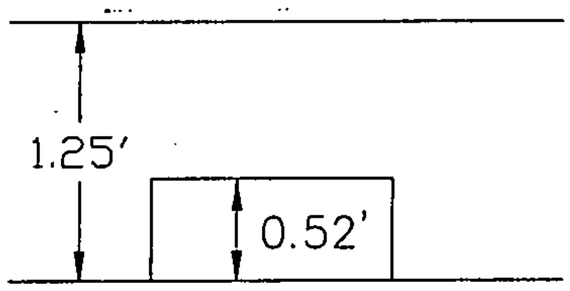
Area at the throat:

L = 10.95'

H = 10 ¾" - 4 ½"
= 6 ¼"
= 0.5208'

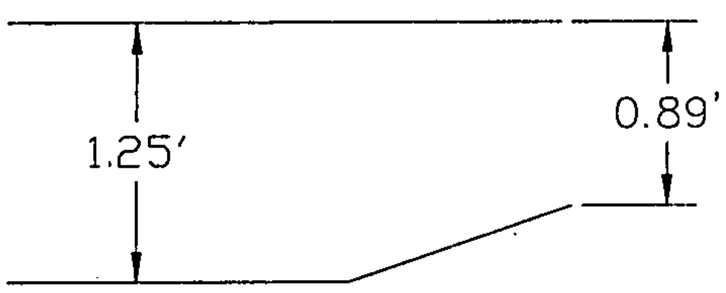
Area = 10.95' x 0.5208'
= 5.70 ft^2 at the throat

THROAT



H=1.25
$Q=CA\sqrt{2gH}$
$Q=0.60(5.70)\sqrt{2(32.2)(1.25)}$
Q=30.68 CFS

GRATE



H=(1.25+0.89)/2=1.08
$Q=CA\sqrt{2gH}$
$Q=0.60(4.21)\sqrt{2(32.2)(1.08)}$
Q=21.07 CFS

TOTAL

Q=21.07+30.68=51.75 CFS

Number Of Inlets Required:

One inlet at each side of the building should be adequate since the inlet capacity is much larger than the actual runoff (13.51 cfs on the west side and 11.17 on the east side of the building.

AHYMO INPUT FILE

```
* ZONE 4
**********************************************************
*         100-YEAR,  6-HR STORM (UNDER EXISTING CONDITIONS)      *
**********************************************************
START
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                        RAIN DELAY=3.65 IN DT=0.03333 HR
* Basin ON-A
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.003537 SQ MI
                        PER A=20.00 PER B=20.00 PER C=10.00 PER D=50.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-B
COMPUTE NM HYD          ID=1 HYD NO=101.2 AREA=0.002444 SQ MI
                        PER A=15.00 PER B=15.00 PER C=10.00 PER D=55.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-C
COMPUTE NM HYD          ID=1 HYD NO=101.3 AREA=0.008714 SQ MI
                        PER A=96.00 PER B=00.00 PER C=0.00 PER D=4.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-A
COMPUTE NM HYD          ID=1 HYD NO=101.4 AREA=0.102050 SQ MI
                        PER A=86.00 PER B=0.00 PER C=4.00 PER D=10.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-B
COMPUTE NM HYD          ID=1 HYD NO=101.5 AREA=0.126078 SQ MI
                        PER A=88.00 PER B=0.00 PER C=4.00 PER D=8.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-C
COMPUTE NM HYD          ID=1 HYD NO=101.5 AREA=0.000707 SQ MI
                        PER A=0.00 PER B=0.00 PER C=35.00 PER D=65.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-D
COMPUTE NM HYD          ID=1 HYD NO=101.6 AREA=0.001096 SQ MI
                        PER A=0.00 PER B=0.00 PER C=35.00 PER D=65.00
                        TP=0.1333 HR MASS RAINFALL=-1
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*         10-YEAR,  6-HR STORM (UNDER EXISTING CONDITIONS)       *
**********************************************************
START
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
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* Basin ON-A
COMPUTE NM HYD          ID=1 HYD NO=111.1 AREA=0.003537 SQ MI
                        PER A=20.00 PER B=20.00 PER C=10.00 PER D=50.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-B
COMPUTE NM HYD          ID=1 HYD NO=111.2 AREA=0.002444 SQ MI
                        PER A=15.00 PER B=15.00 PER C=10.00 PER D=55.00
                        TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-C
COMPUTE NM HYD          ID=1 HYD NO=111.3 AREA=0.008714 SQ MI
                        PER A=96.00 PER B=00.00 PER C=0.00 PER D=4.00
                        TP=0.1333 HR MASS RAINFALL=-1
```

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* Basin OS-A
COMPUTE NM HYD      ID=1 HYD NO=111.4 AREA=0.102050 SQ MI
                    PER A=86.00 PER B=0.00 PER C=4.00 PER D=10.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-B
COMPUTE NM HYD      ID=1 HYD NO=111.5 AREA=0.126078 SQ MI
                    PER A=88.00 PER B=0.00 PER C=4.00 PER D=8.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-C
COMPUTE NM HYD      ID=1 HYD NO=101.5 AREA=0.000707 SQ MI
                    PER A=0.00 PER B=0.00 PER C=35.00 PER D=65.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin OS-D
COMPUTE NM HYD      ID=1 HYD NO=111.6 AREA=0.001096 SQ MI
                    PER A=0.00 PER B=0.00 PER C=35.00 PER D=65.00
                    TP=0.1333 HR MASS RAINFALL=-1
**********************************************************
*        100-YEAR,  6-HR STORM (UNDER PROPOSED CONDITIONS)     *
**********************************************************
START
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                    RAIN DELAY=3.65 IN DT=0.03333 HR
* Basin ON-A
COMPUTE NM HYD      ID=1 HYD NO=102.1 AREA=0.003537 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-B
COMPUTE NM HYD      ID=1 HYD NO=102.2 AREA=0.002444 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-C
COMPUTE NM HYD      ID=1 HYD NO=102.3 AREA=0.008714 SQ MI
                    PER A=94.00 PER B=00.00 PER C=0.00 PER D=6.00
                    TP=0.1333 HR MASS RAINFALL=-1
**********************************************************
*         10-YEAR,  6-HR STORM (UNDER PROPOSED CONDITIONS)     *
**********************************************************
START
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.49 IN RAIN SIX=1.93 IN
                    RAIN DELAY=2.43 IN DT=0.03333 HR
* Basin ON-A
COMPUTE NM HYD      ID=1 HYD NO=112.1 AREA=0.003537 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-B
COMPUTE NM HYD      ID=1 HYD NO=112.2 AREA=0.002444 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* Basin ON-C
COMPUTE NM HYD      ID=1 HYD NO=112.3 AREA=0.008714 SQ MI
                    PER A=94.00 PER B=00.00 PER C=0.00 PER D=6.00
                    TP=0.1333 HR MASS RAINFALL=-1
*
FINISH
```

SUMMARY OUTPUT FILE

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =01/26/2003
INPUT FILE = 200242-4 USER NO.= AHYMO-I-9702c01000R31-AH

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	NOTATION	
START											
RAINFALL TYPE= 1										TIME=	.00
										RAIN6=	2.900
COMPUTE NM HYD	101.10	-	1	.00354	9.09	.345	1.82786	1.500	4.014	PER IMP=	50.00
COMPUTE NM HYD	101.20	-	1	.00244	6.63	.256	1.96573	1.500	4.236	PER IMP=	57.89
COMPUTE NM HYD	101.30	-	1	.00871	12.98	.405	.87200	1.500	2.327	PER IMP=	4.00
COMPUTE NM HYD	101.40	-	1	.10205	170.07	5.452	1.00168	1.500	2.604	PER IMP=	10.00
COMPUTE NM HYD	101.50	-	1	.12608	207.65	6.488	.96481	1.500	2.573	PER IMP=	8.00
COMPUTE NM HYD	101.50	-	1	.00071	2.15	.084	2.22559	1.500	4.754	PER IMP=	65.00
COMPUTE NM HYD	101.60	-	1	.00110	3.32	.130	2.22560	1.500	4.738	PER IMP=	65.00
START											
RAINFALL TYPE= 1										TIME=	.00
										RAIN6=	1.930
COMPUTE NM HYD	111.10	-	1	.00354	5.40	.197	1.04328	1.500	2.387	PER IMP=	50.00
COMPUTE NM HYD	111.20	-	1	.00244	4.04	.150	1.14996	1.500	2.585	PER IMP=	57.89
COMPUTE NM HYD	111.30	-	1	.00871	5.01	.152	.32638	1.500	.899	PER IMP=	4.00
COMPUTE NM HYD	111.40	-	1	.10205	72.55	2.304	.42329	1.500	1.111	PER IMP=	10.00
COMPUTE NM HYD	111.50	-	1	.12608	85.82	2.657	.39509	1.500	1.064	PER IMP=	8.00
COMPUTE NM HYD	101.50	-	1	.00071	1.39	.051	1.34017	1.500	3.071	PER IMP=	65.00
COMPUTE NM HYD	111.60	-	1	.00110	2.15	.078	1.34017	1.500	3.061	PER IMP=	65.00
START											
RAINFALL TYPE= 1										TIME=	.00
										RAIN6=	2.900
COMPUTE NM HYD	102.10	-	1	.00354	11.36	.469	2.48487	1.500	5.017	PER IMP=	90.00
COMPUTE NM HYD	102.20	-	1	.00244	7.85	.324	2.48487	1.500	5.021	PER IMP=	90.00
COMPUTE NM HYD	102.30	-	1	.00871	13.32	.422	.90886	1.500	2.388	PER IMP=	6.00
START											
RAINFALL TYPE= 1										TIME=	.00
										RAIN6=	1.930
COMPUTE NM HYD	112.10	-	1	.00354	7.44	.294	1.55658	1.500	3.285	PER IMP=	90.00
COMPUTE NM HYD	112.20	-	1	.00244	5.14	.203	1.55658	1.500	3.288	PER IMP=	90.00
COMPUTE NM HYD	112.30	-	1	.00871	5.31	.165	.35458	1.500	.953	PER IMP=	6.00
FINISH											

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

December 28, 2004

Ross W. Small, Registered Architect
7400 Montgomery NE Ste. 36
Albuquerque, NM 87109-1591

Re: Certification Submittal for Final Building Certificate of Occupancy for
American Society of Radiologic Technologists Bldg, [L-23 / D11]
15000 Central Ave.
Architect's Stamp Dated 12/15/04

Dear Mr. Small:

The TCL / Letter of Certification submitted on December 27, 2004 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO-Clerk

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

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ARCHITECTS STUDIO

Architects
Planners
Interior Designers
Programmers
Graphic Artists
Illustrators

December 15, 2004

City of Albuquerque
Traffic/Transportation Department
City of Albuquerque, New Mexico. 87103

Hand Delivered

Re: American Society of RadiologicTechnologists Building(ASRT)
15000 Central Ave. SE
Albuquerque, New Mexico

Gentlemen:

We have reviewed the final construction for the above referenced project and find it to be in substantial compliance with the final approved traffic circulation plan.

We have attached the approved plan that was updated in an administrative amendment on 5/19/04 for your review.

Thank you,

Ross Small, RA NCARB
Principal Architect

STATE OF NEW MEXICO
ROSS W. SMALL
NO. 2392
REGISTERED ARCHITECT
DECEMBER 15, 2004

RECEIVED
DEC 27 2004
HYDROLOGY SECTION

7400 Montgomery, North East, Suite 36 Albuquerque, New Mexico 87109-1591
Voice (505) 889-3030 *A Professional Partnership* Facsimile (505) 889-3737
www.architectstudio.com

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

L-23/D11

PROJECT TITLE: ASRT HEADQUARTERS Add'n ZONE MAP/DRG. FILE #: 1002331
DRB #: 03DRB-00265/ EPC#: WORK ORDER#:
03DRB-00263
LEGAL DESCRIPTION:
CITY ADDRESS: 15000 CENTRAL AVE. SE, ALBUQUERQUE, NM

ENGINEERING FIRM: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

OWNER: ASRT CONTACT: JOHN PADILLA
ADDRESS: 1500 CENTRAL AVE. SE PHONE: 298-4500
CITY, STATE: ALBQ., NM. ZIP CODE:

ARCHITECT: ARCHITECTS STUDIO, LLC CONTACT: ROSS SMALL
ADDRESS: 7400 MONTGOMERY NE, STE 36 PHONE: 889-3030
CITY, STATE: ALBUQUERQUE, NM. ZIP CODE: 87109

SURVEYOR: CONTACT:
ADDRESS PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: BRITTON CONSTRUCTION CONTACT: BRETT BRITTON
ADDRESS: PHONE: 268-2626
CITY, STATE: ALBUQUERQUE, NM. ZIP CODE:

CHECK TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
____ DRAINAGE PLAN RESUBMITTAL
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION (HYDROLOGY)
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
_X_ ENGINEERS CERTIFICATION (TCL)
____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

____ SIA / FINANCIAL GUARANTEE RELEASE
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D. APPROVAL
____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
_X_ 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:

_X_ YES
____ NO
____ COPY PROVIDED

DATE SUBMITTED: 12/22/04 BY:

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines 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 subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

RECEIVED
DEC 27 2004
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 14, 2003

Shahab Biazar
10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

RE: Grading and Drainage Plan For ASRT Headquarters (L23-D11) Dated January 26, 2003

Dear Mr. Biazar:

The above referenced drainage plan is approved for both foundation only and site plan for building permit. Prior to the release of the building permit the following items need to be addressed.

1. Need to show both public drainage easements for the culverts and channels that come from Old US 66.
2. Please submit the floodplain easement for the Tijeras Arroyo floodplain.
3. Please submit the details for the grouted riprap outlet.
4. Please show the details on how the 12 and 18-inch storm drain pipes are going to be supported.

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

Sincerely,

Carlos A. Montoya
City Floodplain Administrator

DRAINAGE INFORMATION SHEET

(REV. 11/01/2001)

L-23 | D11

PROJECT TITLE: ASRT Headquarters – CHANT PROPERTIES ZONE ATLAS/DRG. FILE #: ~~L-23-Z~~

DRB #: _____ EPC #: 02EPC-01686 / 02EPC-01689 EPC WORK ORDER #: _____

LEGAL DESCRIPTION: TRACTS A-1, A-2 AND A-3 CHANT PROPERTY ADDITION, SECTION 26, T.10N., R.4E., N.M.P.M., COUNTY OF BERNALILLO, NM

CITY ADDRESS: 15000 Central Ave. SE

ENGINEERING FIRM: *Advanced Engineering and Consulting, LLC* CONTACT: Shahab Biazar
ADDRESS: 10205 Snowflake Ct. NW PHONE: (505) 899-5570
CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87114

OWNER: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- _____ DRAINAGE PLAN
- _____ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- _____ EROSION CONTROL PLAN
- _____ ENGINEER'S CERTIFICATION (HYDROLOGY)
- _____ CLOMR / LOMR
- _____ TRAFFIC CIRCULATION LAYOUT (TCL)
- _____ ENGINEER'S CERTIFICATION (TCL)
- _____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
- _____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- _____ YES
- X NO
- _____ COPY PROVIDED

RECEIVED
JAN 24 2003
HYDROLOGY SECTION

DATE SUBMITTED: 1 / 27 / 2003 BY: Shahab Biazar, 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 of the proposed development defines the degree of drainage detail. One or more of the following levels of submittals may be required based on the following:

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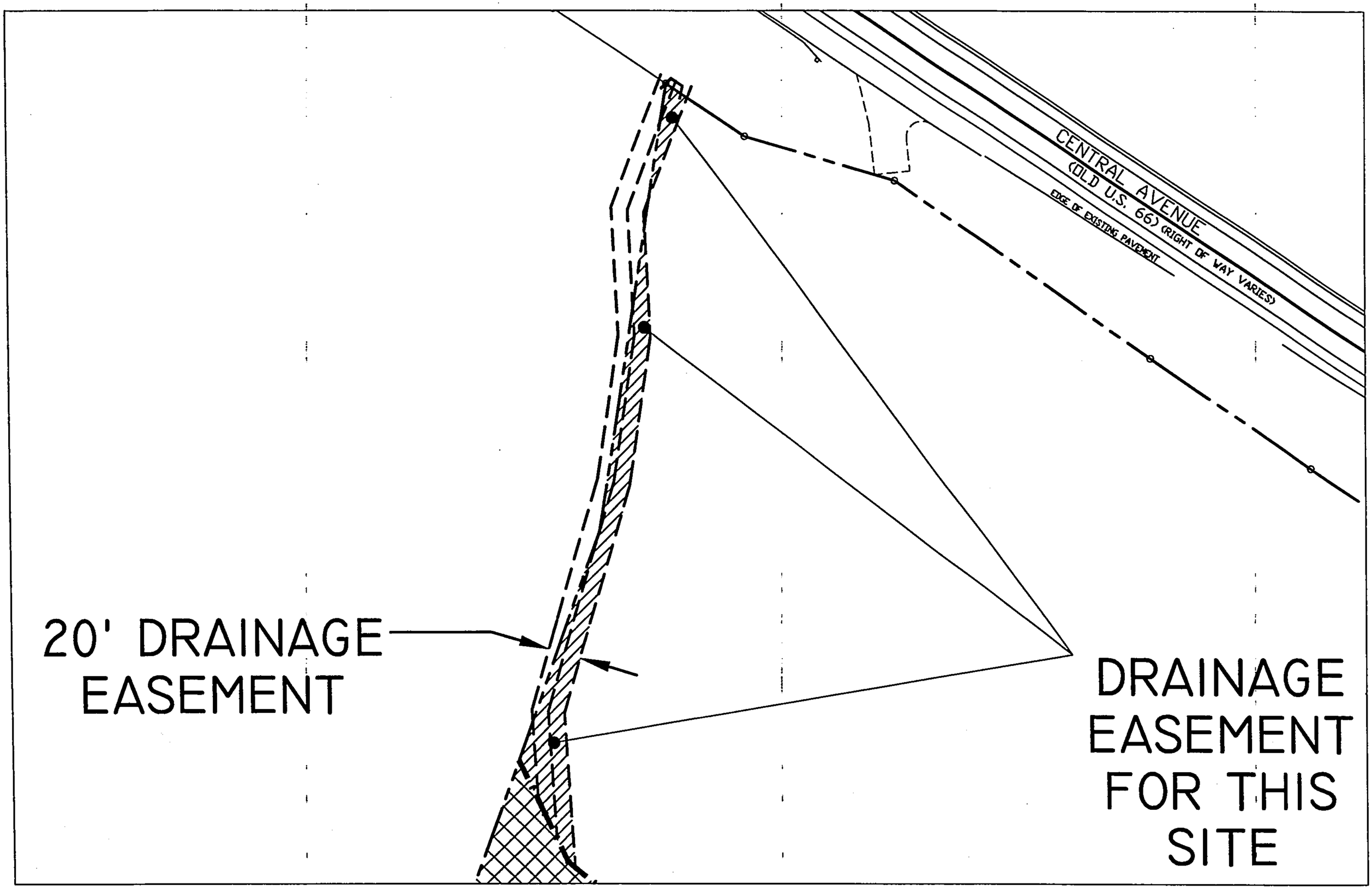
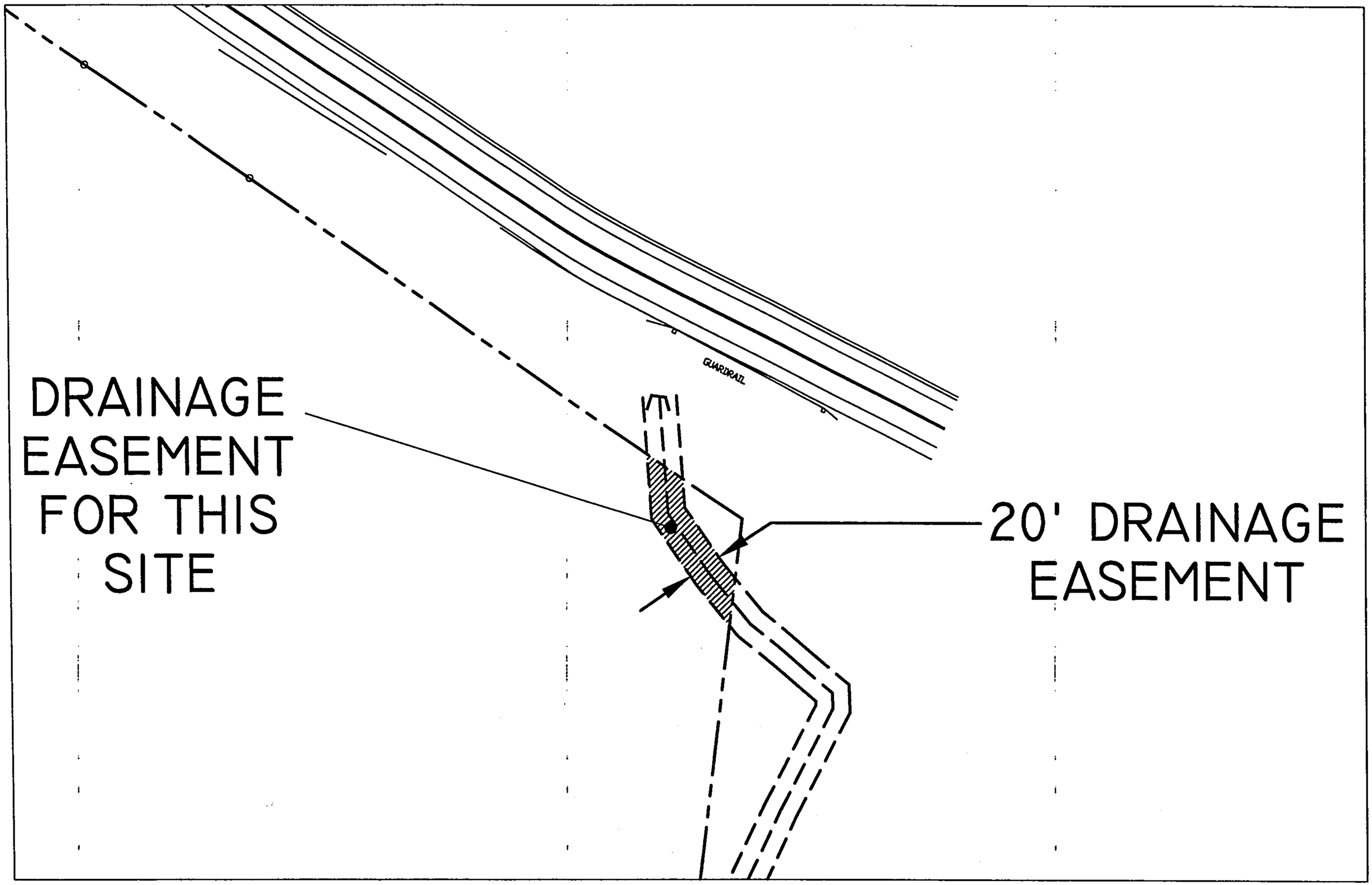
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5)
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or containing five (5) acres or more



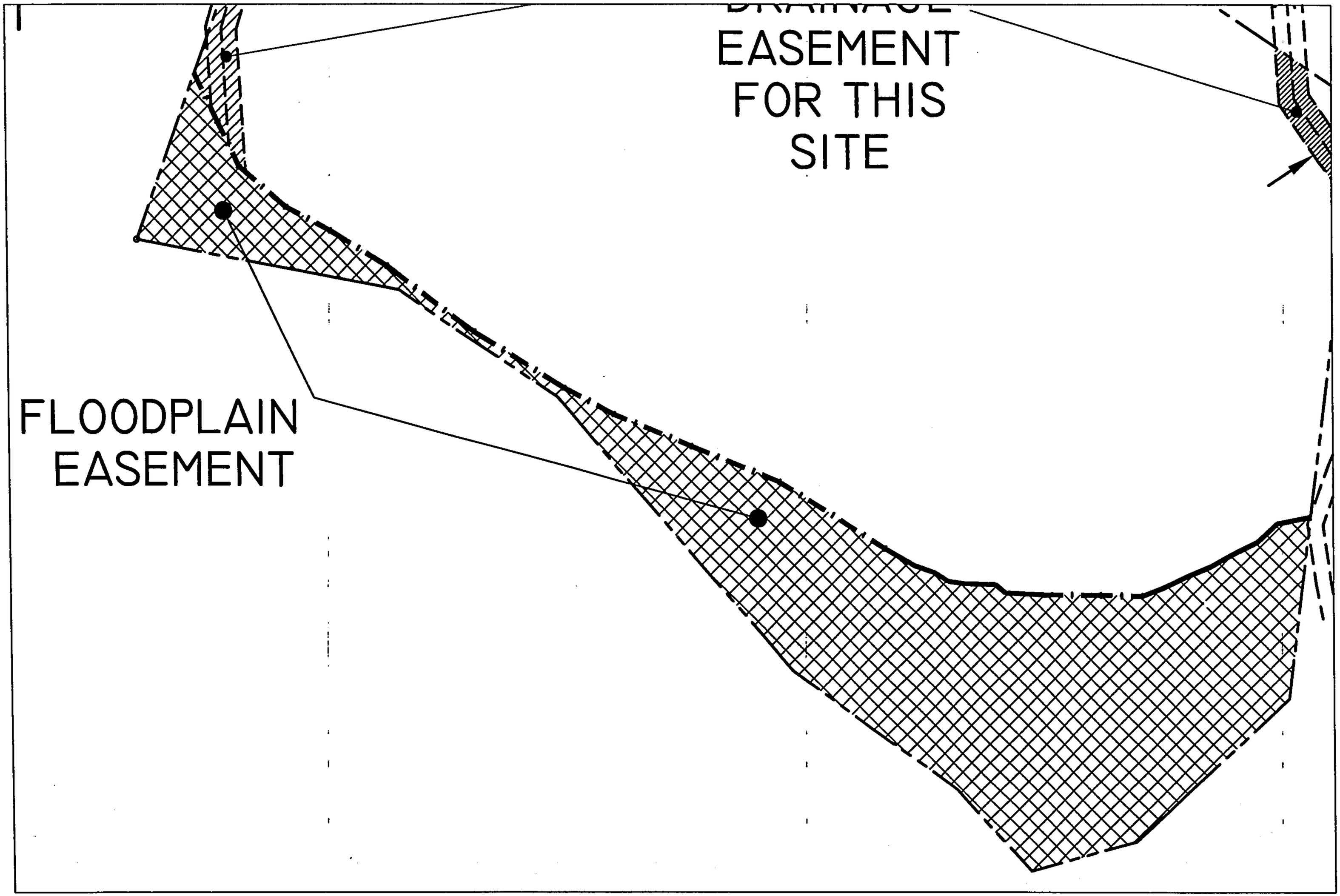
EASEMENT EXHIBIT

NTS



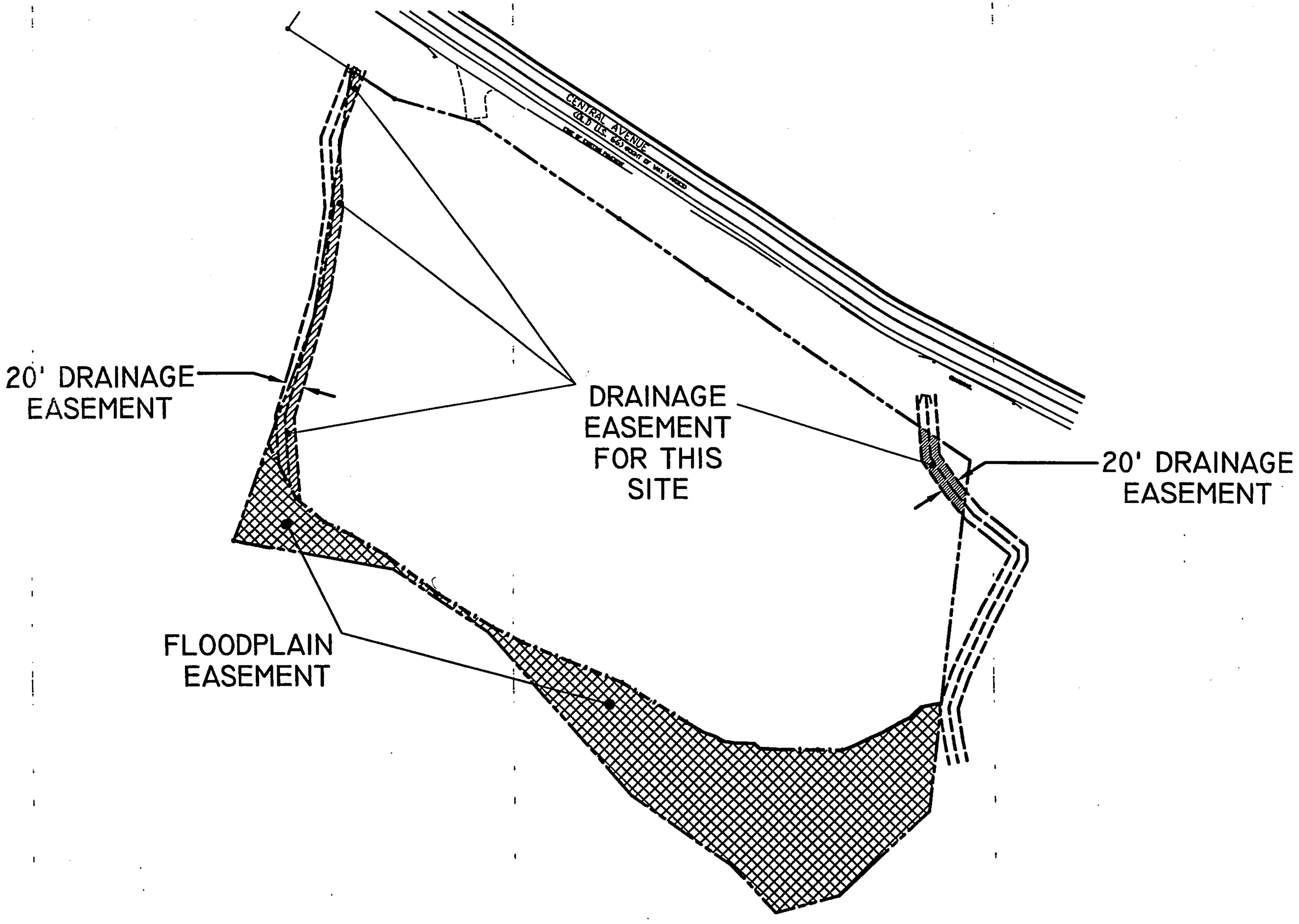
EASEMENT EXHIBIT

NTS



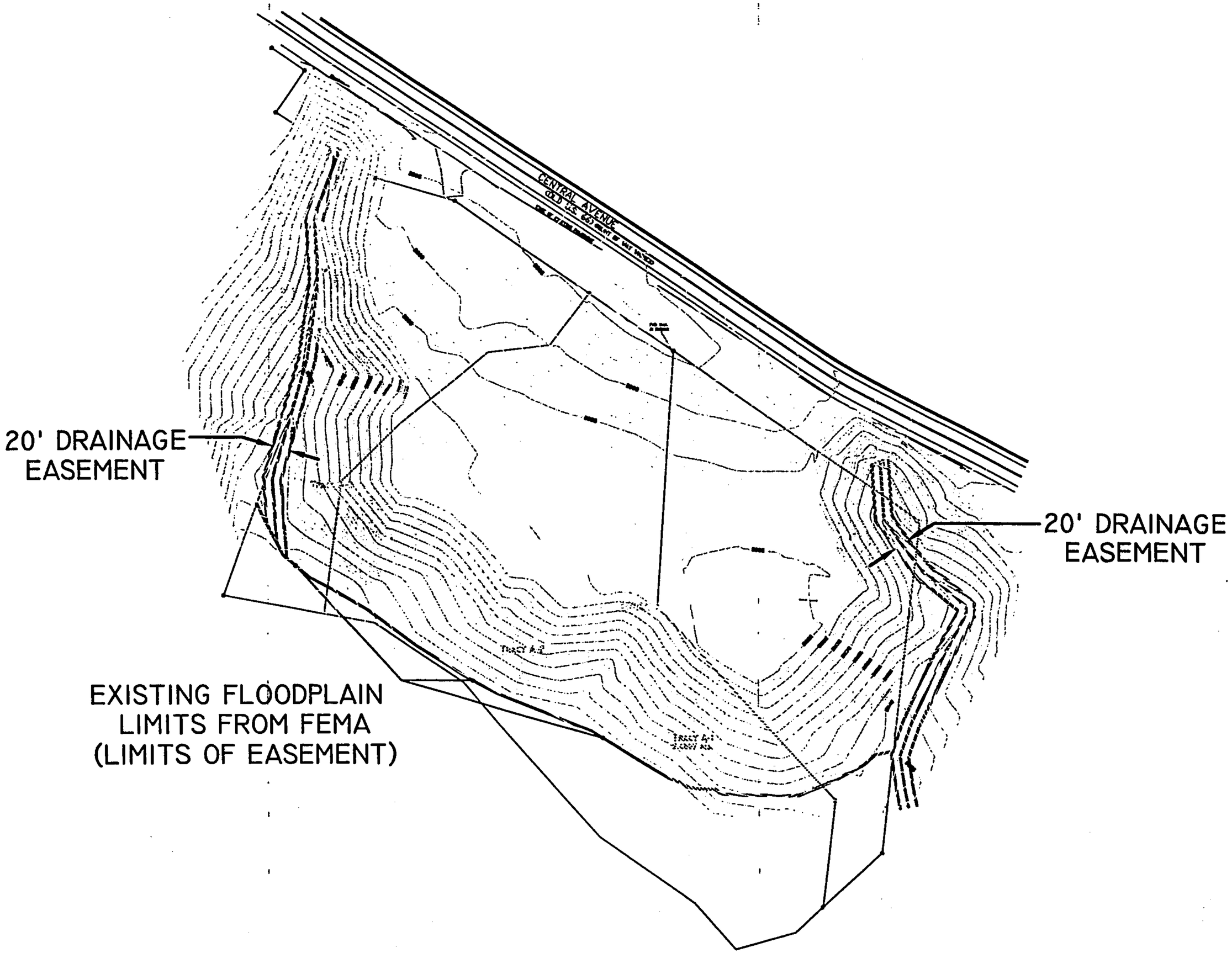
EASEMENT EXHIBIT

NTS



EASEMENT EXHIBIT

NTS



EASEMENT EXHIBIT

NTS

C.L. Weiss Engineering
Post Office Box 97
Sandia Park, N.M. 87047

Phone / Fax (505) 281-1800
Alvarado Office (505) 266-3444

March 4, 1997

Chant & Associates
Tijeras Canyon Site
Drainage and Grading Plan
Supplemental Calculations

prepared by

C.L. Weiss Engineering

to be used in conjunction with the
Drainage / Grading Plan Submittal dated 3/4/97

Existing / Developed Master Plan

AREA OF SITE: 264,384 SF = 6.07 Ac.

Calculations are based on the Drainage Design Criteria for Bernalillo County, Section 22.2, DPM, Vol 2, dated Jan., 1993

EXISTING FLOWS:

On-Site Use Condition

Area a	=	114,962	SF
Area b	=	0	SF
Area c	=	149,422	SF
Area d	=	0	SF
Total Area	=	264,384	SF

DEVELOPED Q:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	10,845	SF
Area c	=	146,497	SF
Area d	=	107,042	SF
Total Area	=	264,384	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Existing E	=	1.17	in.	Developed E	=	1.92 in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Existing V360	=	25844	CF	Developed V360	=	42349 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Existing Qp	=	18.6	CFS	Developed Qp	=	26.2 CFS

The on-site drainage from the area to be developed drains to the natural channels located on the east and west sides of the high portion of the site. Each channel is presently being used by the Interstate drainage system to route flows into the Tijeras Arroyo, which lies at the south side of the site. Developed conditions will collect the drainage at three specific points for discharge into these channels. The drainage from the proposed parking areas and adjoining buildings will be collected by drop inlets and piped to the west channel to follow existing drainage patterns (see calculations for 'Basin 1: Phase I - North Building and Parking' and 'Basin 2: Phase II - Middle Building and Parking'. The drainage from the access street and adjoining area will outlet into the east channel via rundowns from the parking area (see calculations for 'Basin 3: Phase II - Access Street'). Drainage from the developed site will be unrestricted to each channel due to the available capacity and the close proximity of the Tijeras Arroyo .

BASIN 1: Phase I - North Building and Parking

AREA OF BASIN: See Basin Map on Plan | 38,136 | SF | = | 0.88 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	3,090	SF
Area c	=	0	SF
Area d	=	35,046	SF
Total Area	=	38,136	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E	=	2.51	in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Developed V360	=	7988	CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Developed Qp	=	4.4	CFS

Grate Capacities: Based on the flow distributions for the site, the grate capacity will need to handle a minimum of 5.2 cfs (see Basin 2 developed rate). Assuming the grate operates under ponding conditions, the depth of ponded water over the grate would be 0.5', which is a function of the adjoining curb height. For this depth of flow, the inlet is in transition between a weir and an orifice condition. The grate capacity is determined from either the Orifice Equation Q = CA(2gh)^1/2, where C has a value of 0.6, A = the area in sq. ft, g = the constant value of 32.2, and h = the depth of water over the grate, or the Weir Equation Q = 3.3P(h)^1.5 . The Neenah Foundry Catch Basin #3457-C, with a clear area of 6 SF, has a capacity of 20.4 cfs for the orifice condition, and 14.0 cfs for the weir condition. Based on peak flows from Basin 1 of 4.4 cfs and Basin 2 of 5.2 cfs, there is an ample safety factor (>50%) for varying degrees of clogging.

BASIN 2: Phase II - Middle Building and Parking

AREA OF BASIN: See Basin Map on Plan | 45,665 | SF | = | 1.05 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	5,655	SF
Area c	=	0	SF
Area d	=	40,010	SF
Total Area	=	45,665	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted } E = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.45 in.

On-Site Volume of Runoff: $V360 = \frac{E^*A}{12}$

Developed V360 = 9311 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa = 2.20
Qbb = 2.92
Qpc = 3.73
Qpd = 5.25

Developed Qp = 5.2 CFS

The outlet pipe from Phase I will have a slope of 72% and the Phase II pipe will have a slope of 100%. Checking Kuttler's Formula for pipe capacity, an 8" dia PVC pipe will handle in excess of 10 cfs for either of the slopes, but a 12" dia is needed for the inlet control constraints A 2' x 10' concrete box will be constructed at each pipe outlet to help dissipate the flow velocity (see detail on Sheet C.1).

BASIN 3: Phase II - Access Street

AREA OF BASIN: See Basin Map on Plan | 26,328 | SF | = | 0.6 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	0	SF
Area c	=	13,592	SF
Area d	=	12,736	SF
Total Area	=	26,328	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted } E = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.03 in.

On-Site Volume of Runoff: $V360 = \frac{E^*A}{12}$

Developed V360 = 4456 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Developed Qp = 2.7 CFS

The outlet for the street area will be constructed as a rundown outletting onto a grouted rip-rap pad . Flows will enter the east channel over the rock side slope. The rundown leaving the pavement area will pick up flow from the curb and gutter side of the street, with all other flows draining to the drop inlet on the west side of the parking area.

Basin 3 - Concrete Rundown
Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\chant ti.fm2
Worksheet	Chant Tijeras - Basin 3
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.066700	ft/ft
Bottom Width	4.00	ft
Discharge	2.70	cfs

Results		
Depth	0.11	ft
Flow Area	0.42	ft^2
Wetted Perimeter	4.21	ft
Top Width	4.00	ft
Critical Depth	0.24	ft
Critical Slope	0.004602	ft/ft
Velocity	6.38	ft/s
Velocity Head	0.63	ft
Specific Energy	0.74	ft
Froude Number	3.46	
Flow is supercritical.		

DRAINAGE EASEMENT OVERLAY

North

1" = 100'

R=7465.00'

L=464.95'

1204.78'

N07°24'45"W

S56°32'46"W
46.53'

S34°27'14"W
60.13'

S55°30'11"E
140.33'

82.76'

S73°36'02"E
95.94'

S08°56'14"W
276.76'

30' WIDE EXISTING
DRAINAGE EASEMENT

S20°01'00"W
265.36'

EXISTING TIJERAS
ARROYO DRAINAGE
EASEMENT

S79°20'58"E
119.60'

S55°56'05"E
125.47'

S40°54'10"E
239.72'

S88°59'00"W
292.00'

H=65'
V=32'

H = HORIZONTAL DISTANCE
V = VERTICAL DISTANCE

C.L.WEISS ENGINEERING, INC.
POST OFFICE BOX 97 · SANDIA PARK, N.M. · 87047 - (505) 281-1800
1100 ALVARADO DR. NE · ALBUQUERQUE, N.M. · 87110 - (505) 266-3444

C.L. Weiss Engineering, Inc
Post Office Box 97
Sandia Park, N.M. 87047

Phone / Fax (505) 281-1800
Alvarado Office (505) 266-3444

March 4, 1997

Chant & Associates
Tijeras Canyon Site
Drainage and Grading Plan
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Area c	=	146,497	SF
Area d	=	107,042	SF
Total Area	=	264,384	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted } E = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Existing E	=	1.17	in.	Developed E	=	1.92 in.

On-Site Volume of Runoff: $V360 = \frac{E^*A}{12}$

Existing V360	=	25844	CF	Developed V360	=	42349 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20		Qpc	=	3.73
Qbb	=	2.92		Qpd	=	5.25
Existing Qp	=	18.6	CFS	Developed Qp	=	26.2 CFS

The on-site drainage from the area to be developed drains to the natural channels located on the east and west sides of the high portion of the site. Each channel is presently being used by the Interstate drainage system to route flows into the Tijeras Arroyo, which lies at the south side of the site. Developed conditions will collect the drainage at three specific points for discharge into these channels. The drainage from the proposed parking areas and adjoining buildings will be collected by drop inlets and piped to the west channel to follow existing drainage patterns (see calculations for 'Basin 1: Phase I - North Building and Parking' and 'Basin 2: Phase II - Middle Building and Parking'. The drainage from the access street and adjoining area will outlet into the east channel via rundowns from the parking area (see calculations for 'Basin 3: Phase II - Access Street'). Drainage from the developed site will be unrestricted to each channel due to the available capacity and the close proximity of the Tijeras Arroyo .

BASIN 1: Phase I - North Building and Parking

AREA OF BASIN: See Basin Map on Plan | 38,136 | SF | = | 0.88 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	3,090	SF
Area c	=	0	SF
Area d	=	35,046	SF
Total Area	=	38,136	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted } E = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.51 in.

On-Site Volume of Runoff: $V360 = \frac{E^*A}{12}$

Developed V360 = 7988 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Developed Qp = 4.4 CFS

Grate Capacities: Based on the flow distributions for the site, the grate capacity will need to handle a minimum of 5.2 cfs (see Basin 2 developed rate). Assuming the grate operates under ponding conditions, the depth of ponded water over the grate would be 0.5', which is a function of the adjoining curb height. For this depth of flow, the inlet is in transition between a weir and an orifice condition. The grate capacity is determined from either the Orifice Equation Q = CA(2gh)^1/2, where C has a value of 0.6, A = the area in sq. ft, g = the constant value of 32.2, and h = the depth of water over the grate, or the Weir Equation Q = 3.3P(h)^1.5 . The Neenah Foundry Catch Basin #3457-C, with a clear area of 6 SF, has a capacity of 20.4 cfs for the orifice condition, and 14.0 cfs for the weir condition. Based on peak flows from Basin 1 of 4.4 cfs and Basin 2 of 5.2 cfs, there is an ample safety factor (>50%) for varying degrees of clogging.

BASIN 2: Phase II - Middle Building and Parking

AREA OF BASIN: See Basin Map on Plan | 45,665 | SF | = | 1.05 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	5,655	SF
Area c	=	0	SF
Area d	=	40,010	SF
Total Area	=	45,665	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted } E = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.45 in.

On-Site Volume of Runoff: $V360 = \frac{E^*A}{12}$

Developed V360 = 9311 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560
For Precipitation Zone 4

Qpa = 2.20
Qbb = 2.92
Qpc = 3.73
Qpd = 5.25

Developed Qp = 5.2 CFS

The outlet pipe from Phase I will have a slope of 72% and the Phase II pipe will have a slope of 100%. Checking Kuttler's Formula for pipe capacity, an 8" dia PVC pipe will handle in excess of 10 cfs for either of the slopes, but a 12" dia is needed for the inlet control constraints A 2' x 10' concrete box will be constructed at each pipe outlet to help dissipate the flow velocity (see detail on Sheet C.1).

BASIN 3: Phase II - Access Street

AREA OF BASIN: See Basin Map on Plan | 26,328 | SF | = | 0.6 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	0	SF
Area c	=	13,592	SF
Area d	=	12,736	SF
Total Area	=	26,328	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.03 in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Developed V360 = 4456 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Developed Qp = 2.7 CFS

The outlet for the street area will be constructed as a rundown outletting onto a grouted rip-rap pad . Flows will enter the east channel over the rock side slope. The rundown leaving the pavement area will pick up flow from the curb and gutter side of the street, with all other flows draining to the drop inlet on the west side of the parking area.

Basin 3 - Concrete Rundown
Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\chant ti.fm2
Worksheet	Chant Tijeras - Basin 3
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.066700	ft/ft
Bottom Width	4.00	ft
Discharge	2.70	cfs

Results		
Depth	0.11	ft
Flow Area	0.42	ft^2
Wetted Perimeter	4.21	ft
Top Width	4.00	ft
Critical Depth	0.24	ft
Critical Slope	0.004602	ft/ft
Velocity	6.38	ft/s
Velocity Head	0.63	ft
Specific Energy	0.74	ft
Froude Number	3.46	
Flow is supercritical.		

March 31, 1997

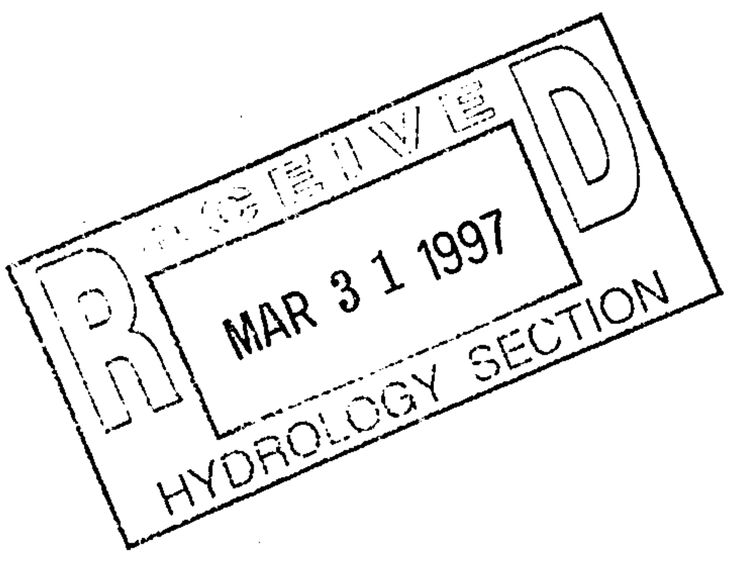
Chant & Associates
Tijeras Canyon Site

Drainage and Grading Plan
Supplemental Calculations

prepared by

C.L. Weiss Engineering

to be used in conjunction with the
Drainage / Grading Plan Submittal dated 3/31/97



Existing / Developed Master Plan

AREA OF SITE: 264,384 SF = 6.07 Ac.

Calculations are based on the Drainage Design Criteria for Bernalillo County, Section 22.2, DPM, Vol 2, dated Jan., 1993

EXISTING FLOWS:

On-Site Use Condition

Area a	=	114,962	SF
Area b	=	0	SF
Area c	=	149,422	SF
Area d	=	0	SF
Total Area	=	264,384	SF

DEVELOPED Q:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	10,845	SF
Area c	=	146,497	SF
Area d	=	107,042	SF
Total Area	=	264,384	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Existing E	=	1.17	in.	Developed E	=	1.92	in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Existing V360	=	25844	CF	Developed V360	=	42349	CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa = 2.20
Qbb = 2.92
Qpc = 3.73
Qpd = 5.25

Existing Qp	=	18.6	CFS	Developed Qp	=	26.2	CFS

The existing drainage from the site drains to the natural arroyo channels located on the east and west sides of the high portion of the site. Each arroyo is presently an active channel and is being used by the Interstate drainage system to route flows into the Tijeras Arroyo, which lies at the south side of the site. However, only the east arroyo has a platted drainage easement already established (see Drainage Easements Summary Plat).

Developed conditions will collect the drainage at three specific points for routing to a single discharge point in the east arroyo to follow existing drainage patterns to the Tijeras Arroyo. The majority of on-site drainage from the proposed parking areas and adjoining buildings will be collected by drop inlets and a private storm sewer system, with the net result of discharge to the west substantially reduced by these improvements. The only drainage to the west arroyo will be from the loading dock areas for each building (see Drainage / Grading Plan spot elevations and keyed notes). Overall drainage from the developed site will be unrestricted due to the available capacity of the adjoining arroyos and close proximity of the Tijeras Arroyo .

BASIN 2: Phase II - Middle Building and Parking

AREA OF BASIN: See Basin Map on Plan | 45,665 | SF | = | 1.05 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	5,655	SF
Area c	=	0	SF
Area d	=	40,010	SF
Total Area	=	45,665	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.45 in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Developed V360 = 9311 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560
For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Developed Qp = 5.2 CFS

Storm Sewer Mains: The outlet pipe from Phase I will have a slope of 1% for the first reach and 7% for the second reach to the junction MH. Phase II pipe will have a slope of 1% to the junction MH. Checking Kuttler's Formula for pipe capacity, a 12" dia PVC pipe will handle in excess of 5.5 cfs for a 1% slope. The final reach of SS into the east arroyo will have a slope of 25% . Rip-rap from the site excavation will be installed in the arroyo at the pipe outlet within the drainage easement. Rip-rap sizes vary from 4" up to 4' in diameter. Both sides of the east arroyo are under common ownership of the developer.

BASIN 1: Phase I - North Building and Parking

AREA OF BASIN: See Basin Map on Plan | 38,136 | SF | = | 0.88 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	3,090	SF
Area c	=	0	SF
Area d	=	35,046	SF
Total Area	=	38,136	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.51 in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Developed V360 = 7988 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa	=	2.20	Qpc	=	3.73
Qbb	=	2.92	Qpd	=	5.25

Developed Qp = 4.4 CFS

Grate Capacities: Based on the flow distributions for the site, the grate capacity will need to handle a minimum of 5.2 cfs (see Basin 2 developed rate). Assuming the grate operates under ponding conditions, the depth of ponded water over the grate would be 0.5', which is a function of the adjoining curb height. For this depth of flow, the inlet is in transition between a weir and an orifice condition. The grate capacity is determined from either the Orifice Equation Q = CA(2gh)^1/2, where C has a value of 0.6, A = the area in sq. ft, g = the constant value of 32.2, and h = the depth of water over the grate, or the Weir Equation Q = 3.3P(h)^1.5 . The Neenah Foundry Catch Basin #3457-C, with a clear area of 6 SF, has a capacity of 20.4 cfs for the orifice condition, and 14.0 cfs for the weir condition. Based on peak flows from Basin 1 of 4.4 cfs and Basin 2 of 5.2 cfs, there is an ample safety factor (>50%) for varying degrees of clogging. Note: Per the submitted Drainage / Grading Plan, the curb height adjacent to the inlets has been raised to 8" providing additional capacity for the storm inlets.

BASIN 3: Phase II - Access Street

AREA OF BASIN: See Basin Map on Plan | 26,328 | SF | = | 0.6 | Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	0	SF
Area c	=	13,592	SF
Area d	=	12,736	SF
Total Area	=	26,328	SF

EXCESS PRECIPITATION:

Precip. Zone 4

Ea = 0.80
Eb = 1.08
Ec = 1.46
Ed = 2.64

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

Developed E = 2.03 in.

On-Site Volume of Runoff: $V360 = \frac{E*A}{12}$

Developed V360 = 4456 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 4

Qpa = 2.20
Qbb = 2.92
Qpc = 3.73
Qpd = 5.25

Developed Qp = 2.7 CFS

The outlet for the street area will be combined with the junction MH for the site SS main by installing an open grate cover on the MH to pick up flows from the gutter area. Any flow bypassing the MH grate will be picked by the drop inlet on the west side of the parking area in front of Building #3.

C.L. Weiss Engineering, Inc
Post Office Box 97
Sandia Park, N.M. 87047

Phone / Fax (505) 281-1800
Alvarado Office (505) 266-3444

March 31, 1997

Mr. Bernie Montoya
City of Albuquerque Hydrology Dept.
POBox 1293
Albuquerque, NM 87103

Re: Tijeras Canyon Site - Drainage Plan Resubmittal/Supplemental Information

Dear Mr. Montoya

As a follow-up to our meeting on Friday, March 21, when you were reviewing our drainage submittal for the above referenced site, I told you that we were going to resubmit the plan due to architectural and site grading changes. You requested that the following additional data be included with the resubmittal to help you complete your review:

Supplemental Information Attachment:

- *Flood plain information for the Tijeras Arroyo.* We have overlaid the property boundary and a site layout on the FEMA Map #37 to give a better idea of the relationship of the development with the Tijeras Arroyo. The horizontal distance between the proposed south building and the flood zone is approximately 65'. The vertical separation is approximately 32'. With the face of the slope made up of exposed granite, we do not foresee any erosion problems from the effects of the Tijeras Arroyo. We have included a site overlay of the FIRM Map #326 for additional information.

- *Analysis of off-site flows affecting the development.* Based on site inspections and an analysis of the topographical maps, no off-site flows affect the site.

- *Easements for drainage.* We have included a copy of the recorded drainage easements which cross the site, referencing the Tijeras Arroyo and the arroyo located on the east side of the site

- *Additional Information.* A small portion of the Tijeras Arroyo easement line has been added to the grading plan. However, we have included a reduced scale drawing of the site map overlaid with the easement map to show a more complete reference of the easement.

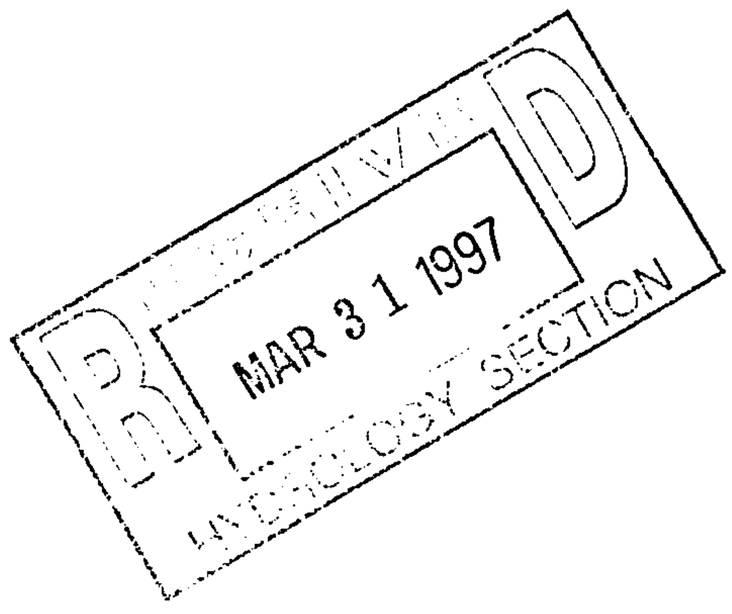
Drainage/Grading Plan Resubmittal:

- The Drainage / Grading plan has been revised to adjust the north building FF up to provide proper coverage over the existing water line. Additional grade revisions were made to accommodate ADA requirements. Finally, a private storm sewer system has been designed to carry all the developed site flows to an existing drainage easement within the east arroyo which leads to the Tijeras Arroyo. Additional data and details concerning the SS has been included on the plan.

I hope this information will be of assistance in your review. If you have any questions, please don't hesitate to call me at 281-1800. Thank you.

Sincerely,

FOR: Christopher L. Weiss, P.E.
C.L. Weiss Engineering, Inc.



City of Albuquerque

July 5, 2000

Chris Weiss, P.E.
C. L. Weiss Engineering, Inc.
P.O. Box 97
Sandia Park, NM 87047

RE: ENGINEER'S CERTIFICATION FOR CHANT AND ASSOC: TIJERAS CANYON SITE, ,(L-23/ D011), ENGINEER'S STAMP DATED 7/17/97, CERTIFICATION DATED 06/22/2000.

Dear Mr. Weiss,

Based upon the information provided in your submittal dated June 23, 2000, the Engineering Certification for Certificate of Occupancy for the project referred to above is approved.

If you have any questions, please call me at 924-3988.

Sincerely,

Stuart Reeder, P.E

Stuart Reeder, P.E.
Hydrology Division

xc: Whitney Reierson
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *Chant & Assoc: Tijeras Canyon Site* ZONE ATLAS / DRNG. FILE #: *L23/D11*

LEGAL DESCRIPTION: *Tract A-4 of the Chant Property Addition, Albuquerque, New Mexico*

CITY ADDRESS: *NA*

ENGINEERING FIRM: *C. L. Weiss Engineering, Inc.* CONTACT: *Bryan J. Bobrick*

ADDRESS: *P.O. Box 97, Sandia Park, NM 87047* PHONE: *266-3444*

OWNER: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

ARCHITECT: *Berent Groth AIA* CONTACT: *Berent Groth*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *266-6700*

SURVEYOR: *Forstbauer Surveying Co.* CONTACT: *Ron Forstbauer*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *268-2112*

CONTRACTOR FIRM: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

PRE-DESIGN MEETING:

_____YES

_X_NO

_____COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO._____

EPC NO._____

PROJ. NO._____

TYPE OF SUBMITTAL:

_____DRAINAGE REPORT

_____DRAINAGE PLAN

_____CONCEPTUAL GRADING & DRAINAGE PLAN

_____GRADING PLAN

_____EROSION CONTROL PLAN

_X_ENGINEER'S CERTIFICATION

RECEIVED
JUN 23 2000
HYDROLOGY SECTION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT

_____PRELIMINARY PLAT

_____SITE DEVELOPMENT PLAN

_____FINAL PLAT

_____BUILDING PERMIT

_____FOUNDATION PERMIT

_X_CERT. OF OCCUPANCY

_____ROUGH GRADING PERMIT

_____GRADING / PAVING PERMIT

_____OTHER_____

DATE SUBMITTED: *June 22, 2000*

BY: *C.L. Weiss Engineering, Inc.*

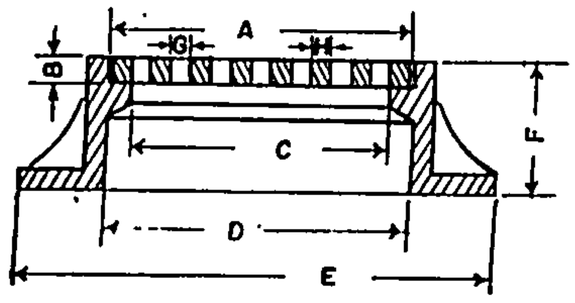
NEENAH FOUNDRY COMPANY

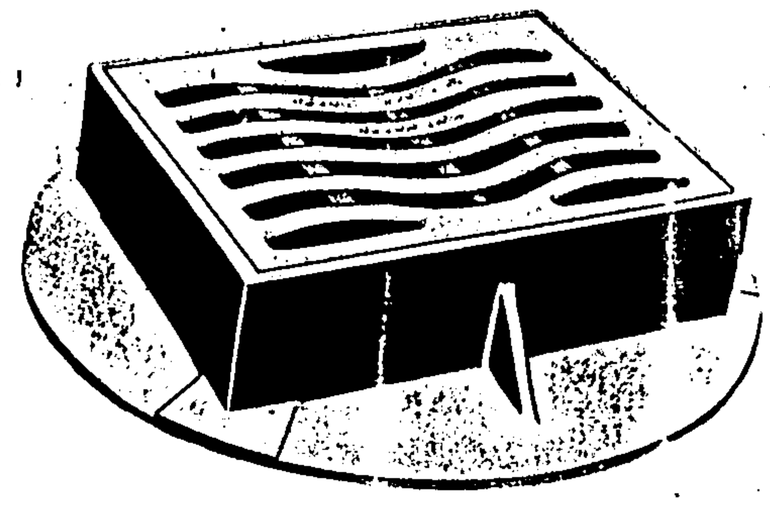
R-3443 — R-3457-C Series Rectangular Gutter Inlet Frames and Grates

Heavy Duty Furnished standard with rectangular base except as noted.

Specify:

1. Catalog number.
2. Alternate round base flange when required.*

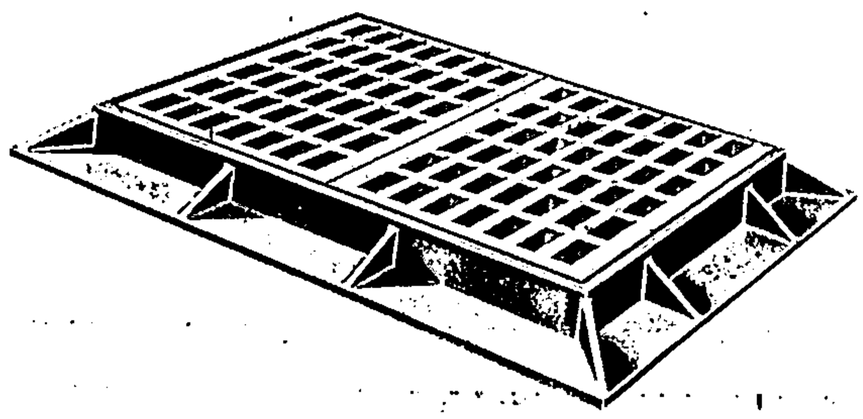


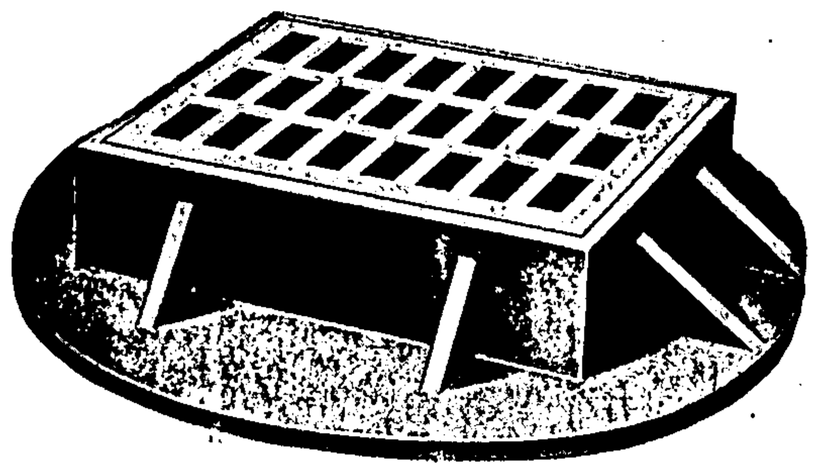


Illustrating R-3448-D with Sinusoidal Grate

Catalog No.	Dimensions in inches A	B	C	D	E	F	G	H	Wt. Lbs.
P 3443	14½x21½	2	13x20	15x22	23x30	5½	1⅝x5	1¼	*275
P 3443-B	14½x21½	2	13x20	14⅜x22⅝	20x30	10¾	1⅝x5	1¼	430
P 3448-B	17¾x22¾	1¾	**	18x23	23¾x32	6¾	1⅝x3¼	1⅛	265
R-3448-C	17¾x22¾	1¾	**	18x23	34" Dia.	6¾	1½x3	1¼	285
R 3448-D	17¾x22¾	1¾	**	18x23	34" Dia.	6¾	1½x5⅜	1	†285
R 3449	18x23	2	**	18x23	24x29	5	1¼x7	1⅛	260
R-3451	18x36	2	16x34	19x37	28x46	7	1¾x6¼	1¼	515
R-3451-B	19¾x26¾	2	17½x24½	20x27	38" Dia.	8¼	1½x11⅜	1½	450 ⊗
R 3454	23x58	1	21x56	24x59	35x70	8½	1x8	1	***980
R 3454-B	23¾x35⅞	2	21¾x33⅜	24x36	31x43	6½	1x32⅜	1	640 ⊗ •
R 3455-A	23½x35	2	22x33	24⅞x36⅞	34x46	6¼	2x9¾	1¼	540 ⊗
R 3455-C	24x36	1¾	22x34	24x36	36x48	9	1¾x6	1	850
R-3457-C	36x48	1¾	**	33x45	42x54	5½	1⅞x21⅜	1¼	***990 △ ⊗

*Can be furnished with round base flanges if specified.
**Frames provided with lugs supporting grate at corners.
***Grate in two pieces.
† Sinusoidal style (Type S) grate.
Frame with center support bar for 2 pc. grate. Machined horizontal bearing surfaces.
⊗ Not recommended for bicycle traffic. For safety standards see pages 88 to 93.
• Also available with Type "L" grate. Order as R-3454-BL.





Illustrating alternate round flange

R-3460 Series Special Gutter Inlet Frames and Grates

Heavy Duty

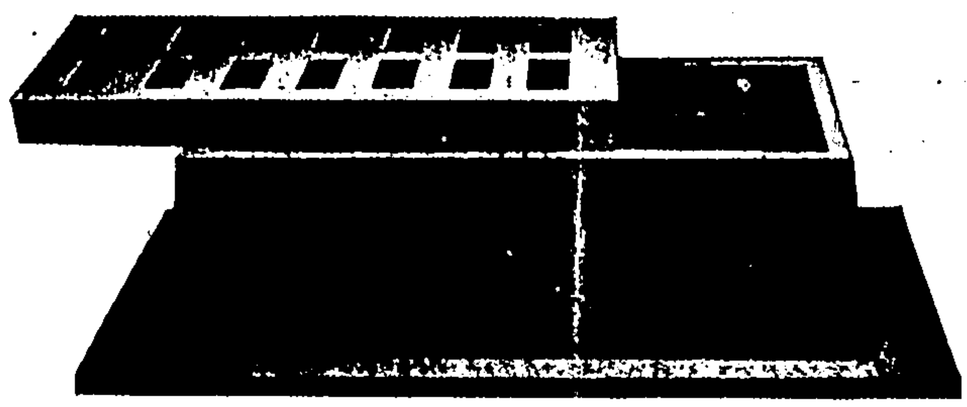
This series furnished standard with Type A grate design as shown. Also available with Type C grate (see R-3337-A).

Specify:

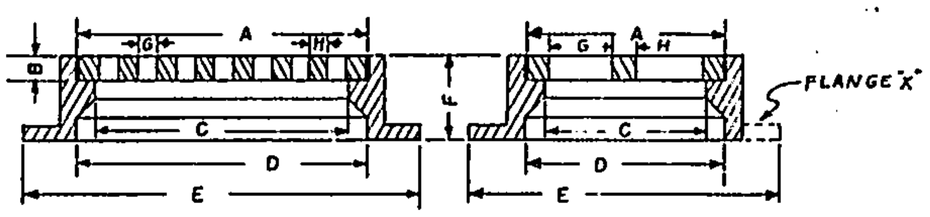
1. Catalog number.
2. Grate as shown or Type C.

Catalog No.	Dimensions in inches A	B	C	D	E	F	G	H	Wt. Lbs.
R-3460-A	14½x21½	2	13x20	15x22	23x30	5½	1⅝x5	1¼	275
R-3460-D*	14½x21½	2	13x20	14⅜x22⅝	20x30	10¾	1⅝x5	1¼	430

*Flange "X" removed making 3-flange inlet.



Illustrating R-3460-D

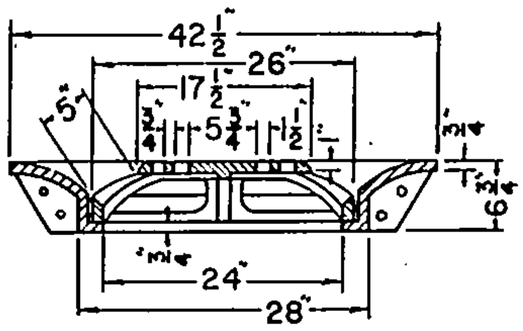


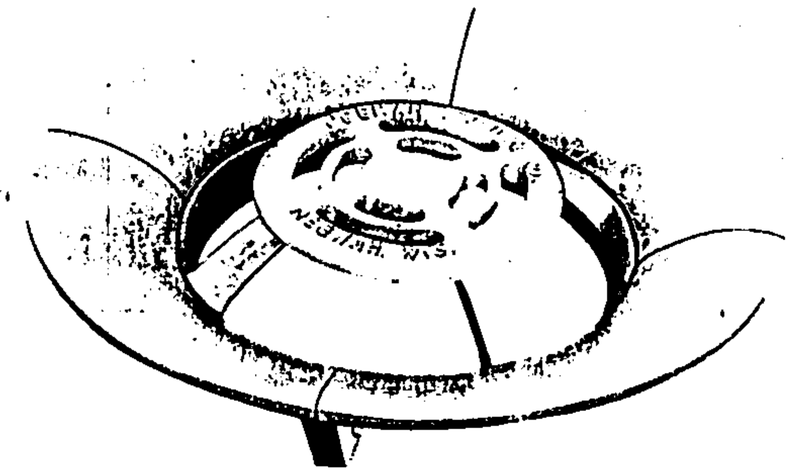
R-4349-A Median Drain Frame and Grate

Heavy Duty

Total Weight 385 Pounds

For use in narrow median on divided highways, freeways or expressways. Frame is made of gray cast iron in four sections bolted together allowing handling on the job without special equipment. Grate is of ductile iron, grade 60-40-18, providing adequate strength to resist impact from unauthorized vehicles crossing median strip. Design provides large capacity drainage when required during heavy and sudden rains.



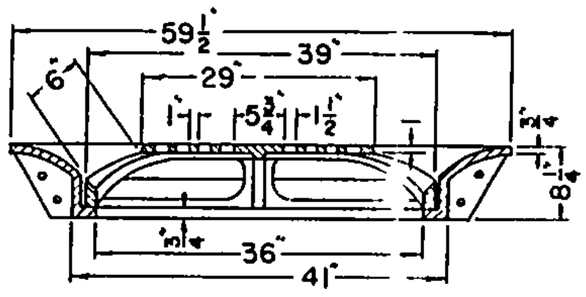


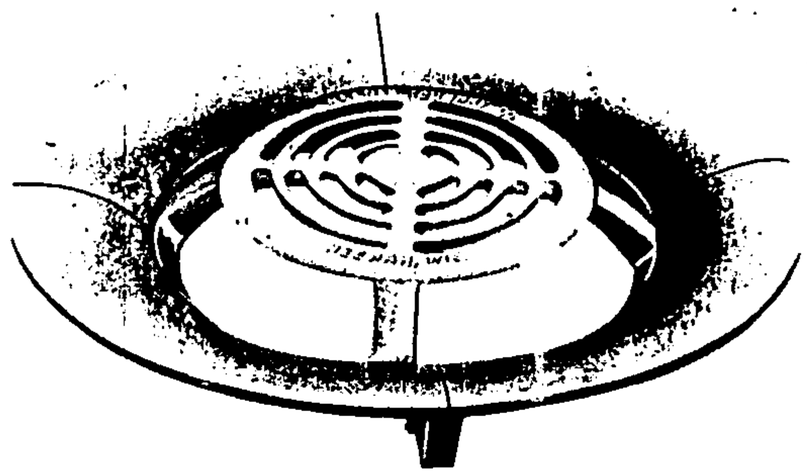
R-4349-B Median Drain Frame and Grate

Heavy Duty

Total Weight 825 Pounds

Same as R-4349-A except designed for 36" opening.





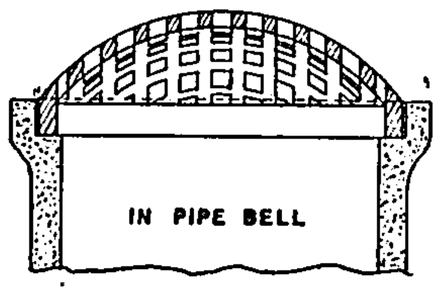
R-4350 Series Beehive Grates to Fit Sewer Pipe Bells

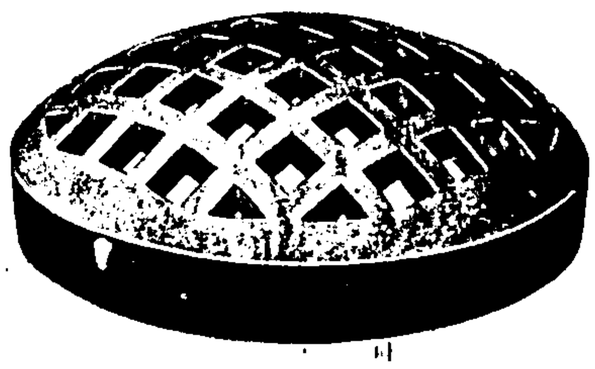
Heavy Duty

Bell and spigot vitrified clay and concrete pipe are made under many specifications and dimensions vary. Check the grate sizes in the table to be sure they will fit the pipe you are using.

Catalog No.	Dimensions in inches: Size Pipe	Diameter	Thickness at Rim	Overall Height	Wt. Lbs.
R-4350-1	8	10⅜	2	4	25
R-4350-A*	10	12	1	4	30
R-4350-B	12	14¾	2½	5½	50
R-4350-C	15	18¼	2½	6¼	75
R-4350-D	18	22	3	7½	110

*Vertical radial slots.



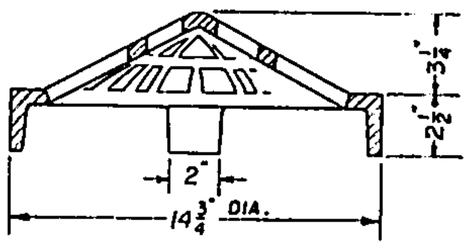


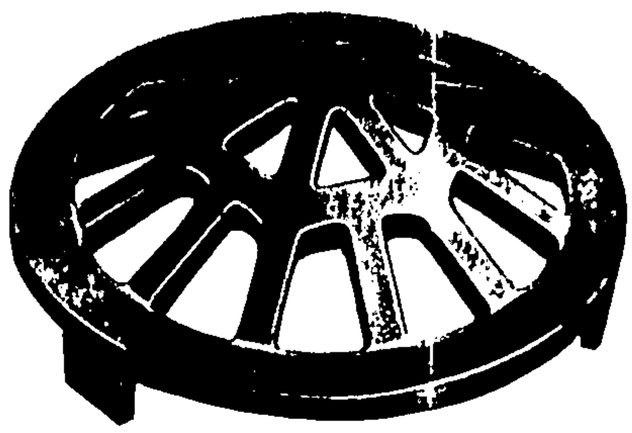
R-4351-B Beehive Grate

Heavy Duty

Total Weight 22 Pounds

For bell of 12" bell and spigot pipe. Since pipe is made under many specifications, there is a wide variation in dimensions. Check the grate size as shown on the drawing to be sure it will fit the pipe you are using.





NEENAH FOUNDRY COMPANY

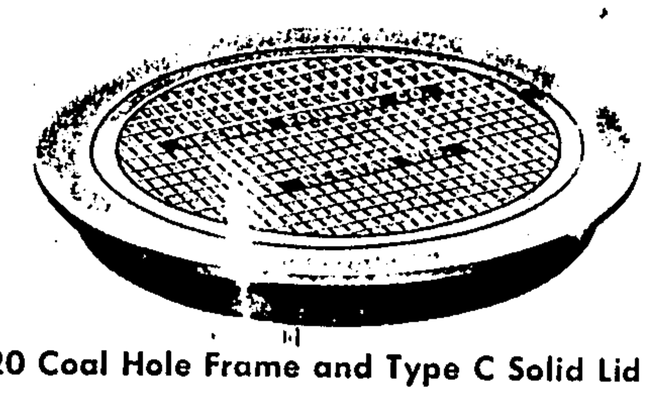
R-6001 — R-6080 Series Manhole Frames and Solid Lids

Light Duty — Round for Slab Construction

The manhole covers shown here, for off-the-street traffic, are specifically for use on cisterns, coal holes, wells, pumps, or for inspection openings.

For special industrial uses manhole castings can be furnished non-magnetic sparkproof in cast aluminum or brass.

Furnished standard with ground bearing surfaces unless noted otherwise.



R-6020 Coal Hole Frame and Type C Solid Lid

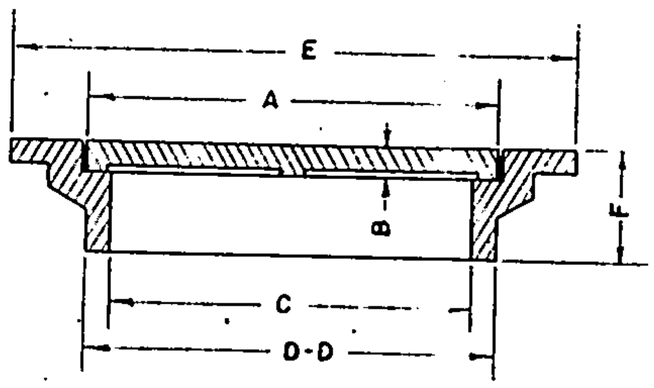
Lids are furnished standard with open type pickholes. However, they can be supplied with various types of lift handles as shown on page 249 (except Type F). Locking devices, shown on page 250, are available on special order.

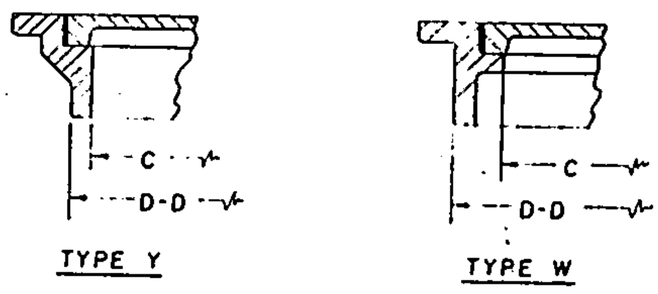
If required, lids can be furnished with special lettering.

Specify:

1. Catalog number.
2. Type of lift handle required.
3. Type of locking device if required.
4. Special lettering.

Catalog No.	Dimensions in inches						Frame Type	Wt. Lbs.
	A	B	C	D-D	E	F		
R-6001	6	1	5	6	10	3½	Y	25
R-6003	9	1	8	9	12	2½	Y	35
R-6005	12	1	11	12	14¾	2½	Y	43
R-6006	13	¾	11¾	14	17	2½	W	45
R-6007	14	¾	12	15	20	2½	W	60
R-6008	16	¾	15	16	20¼	2½	Y	70
R-6010	18	½	16½	20	22½	4	W	80
R-6011	18	½	17	18	22½	2½	Y	72
R-6012	20½	⅝	18	22½	24	2½	W	100
R-6020	21½	1	20	23½	27	4	W	155
R-6034	23½	½	22	23½	26½	3	Y	140
R-6040	24	¾	22	23¼	30	3½	Y	140
R-6044	25	1	22	23¼	28	6	Y	225
R-6044-1	23¾	¾	22½	25	29½	4	W	165
R-6044-A	25½	½	24	25¼	30½	4	Y	155
R-6070	26⅝	¾	25	26¼	31	4	Y	200
R-6077	31¾	¾	30	31½	36½	6	Y	345
R-6077-A	31¾	¾	30	31½	36½	3½	Y	310
R-6080	33½	¾	32	34¾	37	4	Y	280





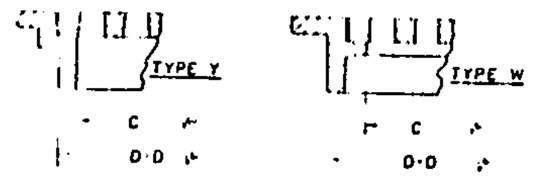
Standard Frame Types

R-6110 — R-6137 Series Catch Basin Frames and Grates

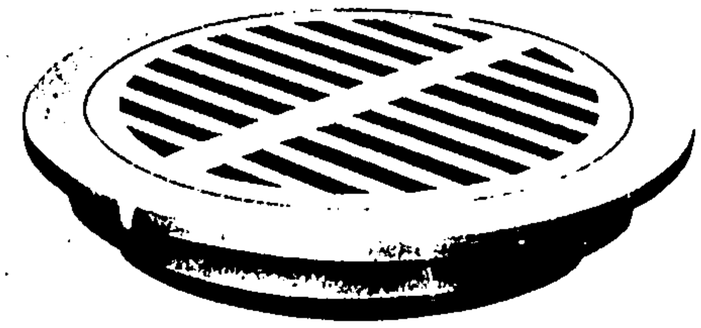
Heavy and Light Duty — Round for Slab Construction

Furnished standard with ground bearing surfaces unless noted otherwise.

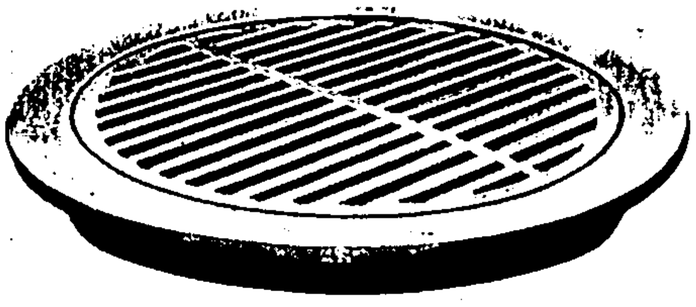
Standard Frame Types



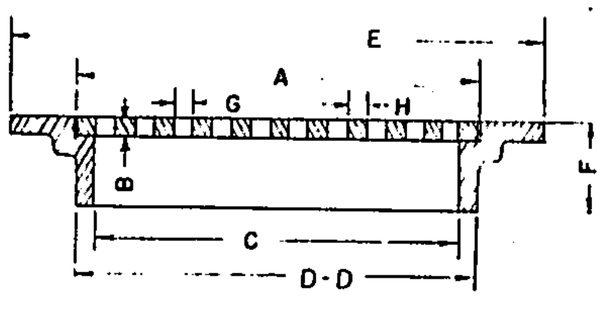
Catalog No.	Dimensions in inches								Frame Type	Wt. Lbs.
	A	B	C	D-D	E	F	G	H		
~~Heavy Duty~~										
R-6110	21	2½	18	20	27½	5	1⅜	1	Y	330•
R-6111	23	1¼	20	22	29½	4	1⅜	1	Y	230•
R-6112	23	1¾	21	22¾	30	4	1½	1	Y	220
~~R-6113~~	~~24~~	1⅝	22	25¼	30	4	2	1	W	230
R-6114	27	1¼	23½	25½	33½	4	1½	1	Y	235•
R-6115	27	2½	24	26	33½	5	1½	1	Y	445•
R-6116	29	1¾	27	29	35	6	1½	1	Y	460•
R-6117	32⅜	2	30	32	39½	6	1½	1	Y	550•*
R-6118	38	1½	36	38	49	4½	1	1	Y	790*
Light Duty										
R-6130	20½	⅝	18	22½	24	2½	1	1	W	95
R-6131	21½	1	20	23½	27	4	½	¾	W	140
R-6132	24	¾	22	23¼	30	3½	½	½	Y	130
R-6133	25	1	22	23¼	28	6	½	½	Y	180
R-6134	26⅝	¾	25	26¼	31	4	⅞	¾	Y	170
R-6136	31¾	¾	30	31½	36½	6	1¼	1	Y	325•
R-6137	33½	¾	32	34¾	37	4	1¼	1	Y	230•



Heavy Duty R-6115 Frame and Grate



Light Duty R-6134 Frame and Grate



•Not recommended for bicycle traffic. For safety standards see pages 88 to 93.
*Machined horizontal bearing surfaces.

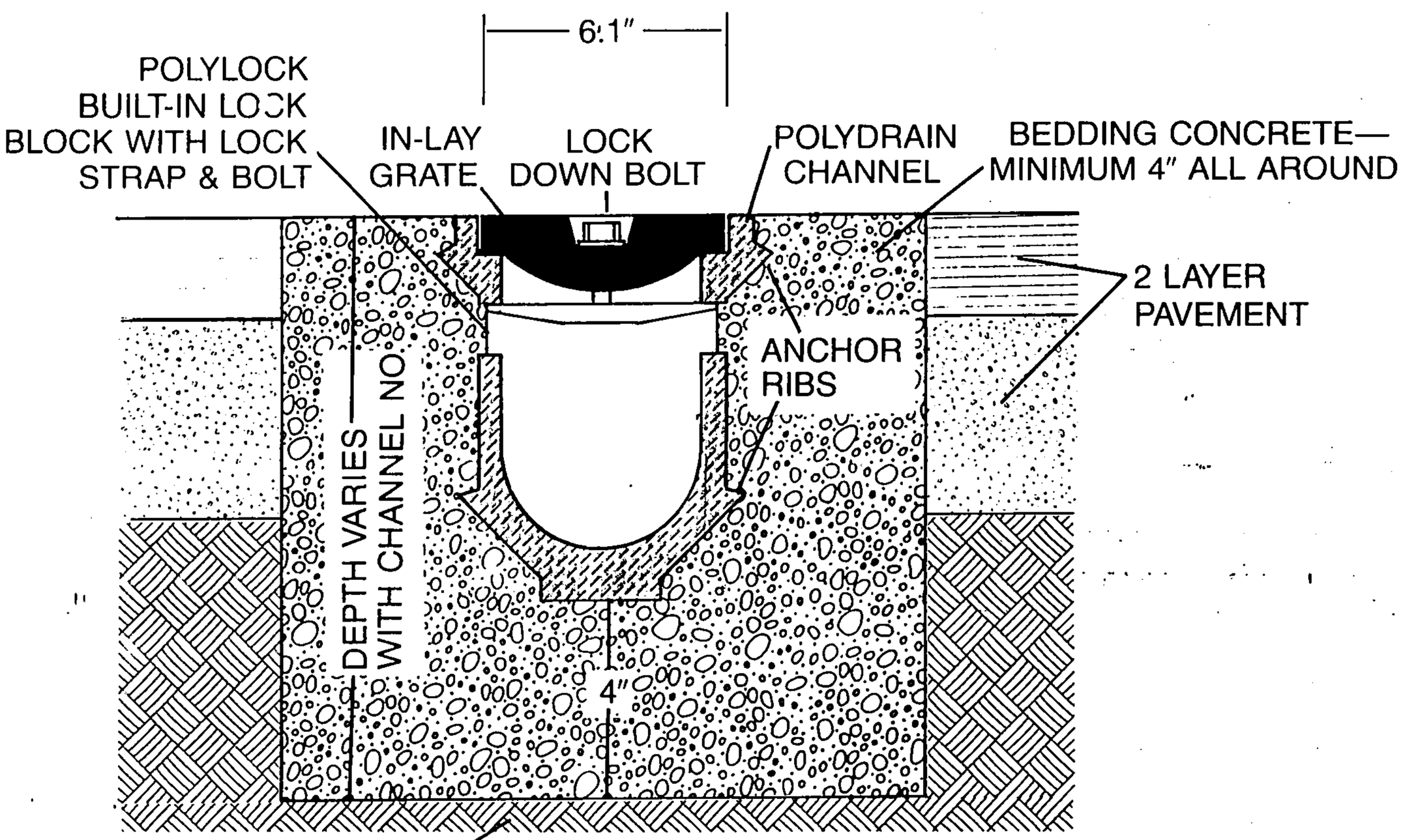
NEENAH FOUNDRY COMPANY

polydrain

SPECIFICATION DETAIL

TYPICAL POLYDRAIN INSTALLATION IN 2 LAYER PAVEMENT WITH IN-LAY GRATE.

CROSS SECTIONAL VIEW



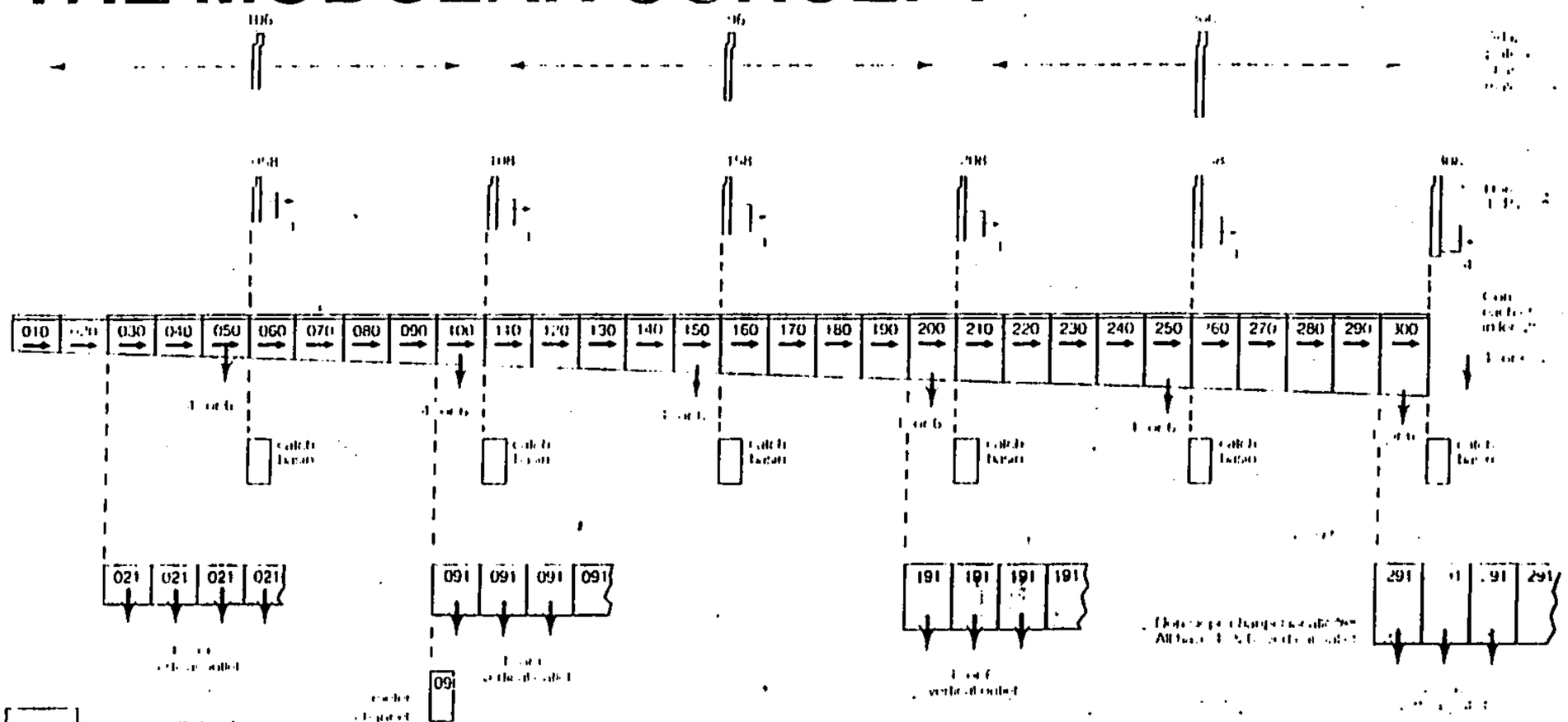
SCALE: 1/4" = 1"

NOTE: The above example is a No. 100 Channel with a Cast Iron In-Lay Grate installed in a pavement with 2" of wear surface and 4" of CABC.

POLYDRAIN P. O. Box 837/Rt. 1 Murdock Road/Troutman, N. C. 28166/(704) 528-9806/(800) 438-6057 Telex 703567

polydrain

THE MODULAR CONCEPT



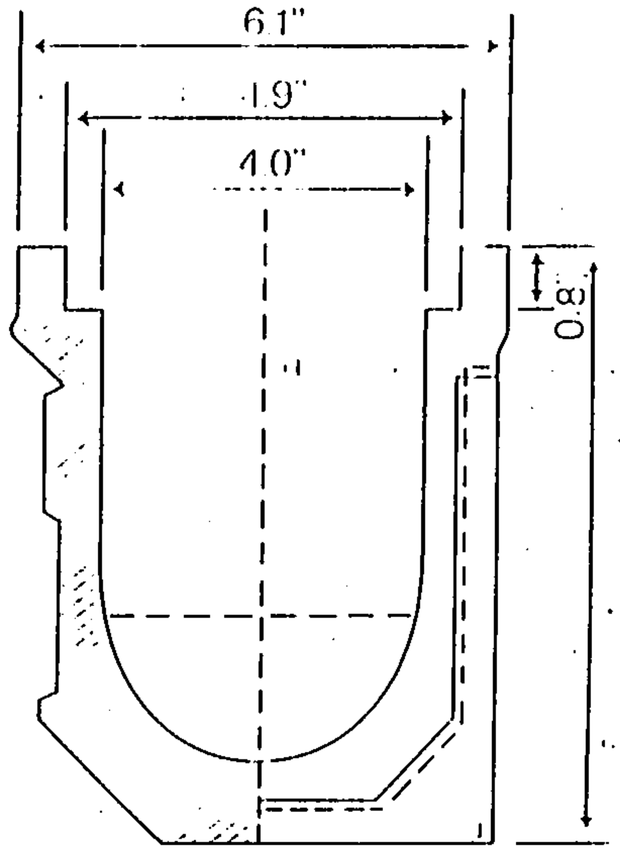
The PolyDrain System consists of 30 interlocking channels, eac meter) in length, with a built-in slope of 0.6%. Non sloping char inserted at the indicated locations to extend the system to gr PolyDrain catch basins may be installed at the designated location

TECHNICAL DATA

CHANNEL NUMBER	DEPTH OF CHANNEL (IN.) MIN	DEPTH OF CHANNEL (IN.) MAX	HYDRAULIC DATA: FLOW CROSS SECTION (IN^2)	HYDRAULIC DATA: MAXIMUM RATE OF FLOW (GPM)*	WEIGHT (POUNDS)
001	1.1	1.9	0.1		.6
010	5.3	5.6	12.5	128	32
020	5.6	5.8	13.5	141	33
021	5.8	5.8	13.9	146	33
030	5.9	6.0	14.3	151	33
040	6.0	6.3	15.3	164	34
050	6.1	6.5	16.3	177	36
060	6.5	6.7	17.1	187	36
070	6.7	7.0	18.1	200	36
080	7.0	7.2	19.1	213	37
090	7.2	7.4	19.9	224	37
091	7.4	7.4	20.3	229	37
096	7.4	7.4	20.3	229	19
100	7.4	7.7	20.9	237	38
110	7.7	7.9	21.9	250	38
120	7.9	8.1	22.7	261	40
130	8.1	8.4	23.7	274	40
140	8.4	8.6	24.7	287	41
150	8.6	8.9	25.7	301	41
160	8.9	9.1	26.7	314	42
170	9.1	9.3	27.5	324	43
180	9.3	9.6	28.5	338	47
190	9.6	9.8	29.5	351	47
191	9.8	9.8	29.9	356	47
200	9.8	10.0	30.3	362	49
210	10.0	10.3	31.3	375	50
220	10.3	10.5	32.3	389	50
230	10.5	10.7	33.1	399	50
240	10.7	11.0	34.1	413	51
250	11.0	11.2	35.1	426	52
260	11.2	11.5	36.1	440	53
270	11.5	11.7	37.1	453	53
280	11.7	11.9	37.9	464	54
290	11.9	12.2	38.9	477	54
291	12.2	12.2	39.5	485	54
300	12.2	12.4	39.9	491	56

*@ 0.6% SLOPE

ALL CHANNELS ARE 39.37" [1 METER] IN LENGTH EXCEPT NO. 096 WHICH IS 19.68" [.5 METER]



Minimum overall depth [No. 010]	5.3 in
Maximum overall depth [No. 300]	12.4 in
Inside top width [all channels]	4.0 in
Normal channel length	39.37 in
also [No. 096]	19.68 in
Slope of system	0.6%
Length of slope system	98.4 ft

POLYDRAIN®

P. O. Box 837/Rt. 1 Murdock Road/Troutman, N. C. 28166/(704) 528-9806/(800) 438-6057 To

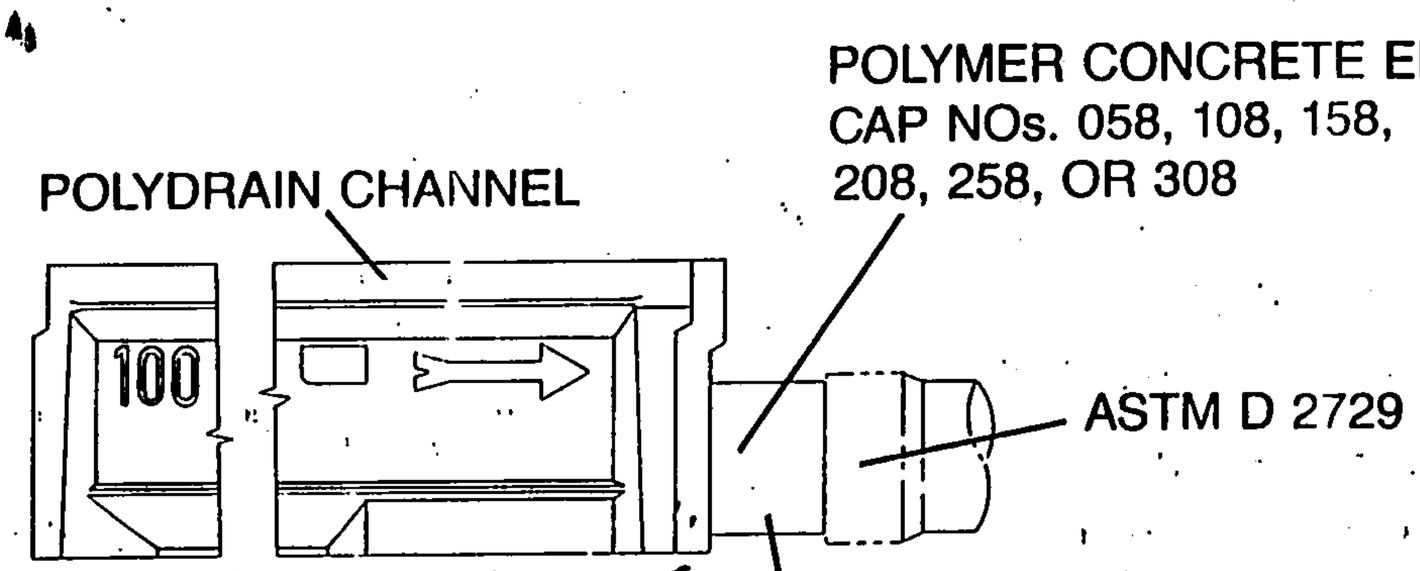
Printed in U.S.A.

polydrain

SPECIFICATION DETAIL.

HORIZONTAL OUTLET FOR POLYDRAIN CHANNELS.

SIDE VIEW



(EXAMPLE ABOVE, NO. 100 CHANNEL & NO. 108 END CAP)

SCALE: 1/8" = 1"

EXTEND THROUGH RETAINING WALL @ DOCK AREAS.

EXTEND TO CATCH BASIN @ BLDG. 3 VALLEY GUTTER.

NOTE: End Cap 058 Fits to Channel 050
108 Fits to Channel 100
158 Fits to Channel 150
208 Fits to Channel 200
258 Fits to Channel 250
308 Fits to Channel 300

POLYDRAIN® P. O. Box 837/Rt. 1 Murdock Road/Trout nan, N. C. 28166/(704) 528-9806/(800) 438-6057 Telex 703567

DRAINAGE INFORMATION SHEET

D11

PROJECT TITLE: *Chant & Assoc: Tijeras Canyon Site* ZONE ATLAS / DRNG. FILE #: *L-23*

LEGAL DESCRIPTION: *Tract A-4 of the Chant Property Addition, Albuquerque, New Mexico*

CITY ADDRESS: *NA*

ENGINEERING FIRM: *C. L. Weiss Engineering, Inc.* CONTACT: *Bryan J. Bobrick*

ADDRESS: *P.O. Box 97, Sandia Park, NM 87047* PHONE: *266-3444*

OWNER: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

ARCHITECT: *Berent Groth AIA* CONTACT: *Berent Groth*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *266-6700*

SURVEYOR: *Forstbauer Surveying Co.* CONTACT: *Ron Forstbauer*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *268-2112*

CONTRACTOR FIRM: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

PRE-DESIGN MEETING:

_____ YES

__X__ NO

_____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO._____

EPC NO._____

PROJ. NO._____

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT

__X__ DRAINAGE PLAN

_____ CONCEPTUAL GRADING & DRAINAGE PLAN

__X__ GRADING PLAN

_____ EROSION CONTROL PLAN

_____ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT

_____PRELIMINARY PLAT

_____SITE DEVELOPMENT PLAN

_____FINAL PLAT

__X__ BUILDING PERMIT

_____FOUNDATION PERMIT

_____CERT. OF OCCUPANCY

_____ROUGH GRADING PERMIT

_____GRADING / PAVING PERMIT

_____OTHER_____

DATE RESUBMITTED: *March 4, 1997*

BY: *C.L. Weiss Engineering, Inc.*

RECEIVED
MAR 07 1997
HYDROLOGY SECTION

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *Chant & Assoc: Tijeras Canyon Site* ZONE ATLAS / DRNG. FILE #: *L-23/D11*

LEGAL DESCRIPTION: *Tract A-4 of the Chant Property Addition, Albuquerque, New Mexico*

CITY ADDRESS: *NA 14800 Central Ave SE.*

ENGINEERING FIRM: *C. L. Weiss Engineering, Inc.* CONTACT: *Bryan J. Bobrick*

ADDRESS: *P.O. Box 97, Sandia Park, NM 87047* PHONE: *266-3444*

OWNER: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

ARCHITECT: *Berent Groth AIA* CONTACT: *Berent Groth*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *266-6700*

SURVEYOR: *Forstbauer Surveying Co.* CONTACT: *Ron Forstbauer*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *268-2112*

CONTRACTOR FIRM: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

PRE-DESIGN MEETING:

_____YES

_X_NO

_____COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO._____

EPC NO._____

PROJ. NO._____

RECEIVED
MAR 31 1997
HYDROLOGY SECTION

TYPE OF SUBMITTAL:

_____DRAINAGE REPORT

_X_DRAINAGE PLAN

_____CONCEPTUAL GRADING & DRAINAGE PLAN

_X_GRADING PLAN

_____EROSION CONTROL PLAN

_____ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT

_____PRELIMINARY PLAT

_____SITE DEVELOPMENT PLAN

_____FINAL PLAT

_X_BUILDING PERMIT

_X_FOUNDATION PERMIT *pm*

_____CERT. OF OCCUPANCY

_____ROUGH GRADING PERMIT

_____GRADING / PAVING PERMIT

_____OTHER_____

DATE RESUBMITTED: *March 31, 1997*

BY: *C.L. Weiss Engineering, Inc.*

FOUNDATION Approved on 4/1/97 pm Phase I

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

April 20 ,1997

C.L. Weiss
C.L. Weiss Engineering Inc.
P.O. Box 97
Sandia Park , New Mexico 87047

RE: REVISED DRAINAGE PLAN FOR CHANT & ASSOC. TIJERAS CANYON SITE (L23-D11) ENGINEER'S STAMP DATED 3/31/97 PHASE I & II

Dear Mr. Weiss:

Based on the information provided on your March 31, 1997 resubmittal, Phase I for the above referenced site is approved for Foundation Permit.

Please be advised that prior to Building Permit release for Phase I the following must be addressed:

1. The limits of the flood plain must be shown on the grading plan at (1"=40').

2. Fema map panel 326 showing the site will need to be included on the plan drawing.

3. The proposed trench drain on the south side of Building #1 must be tied to the proposed storm drain system. It will not be allowed to drain to the west as shown.

4. Note on the plan drawing identifying that the outfall will be part of the Phase I construction.

5. Sign-off block for AMAFCA'S signature.

For Phase II construction approval, the following must be addressed:

1. Building 3 must be tied to the proposed storm sewer system.

2. The Flood Plain Administrator will be evaluating the information that you submitted pertaining to the erosion concerns. She will contact you as soon as her review is

completed.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Engineering Associate

CITY OF
Albuquerque

Martin J. Chávez, Mayor

May 12, 1997

Chris Weiss, P.E.
C.L. Weiss Engineering, Inc.
Post Office Box 97
Sandia Park, NM 87047

RE: Chant & Associates, Tijeras Canyon Site (L23/D11A)

Dear Chris:

The analysis provided in your letter of April 4, 1997 indicates that the elevation of the proposed building site is about 45 feet above the water surface in the Tijeras arroyo. The plan also shows that building # 3 is located approximately 60 feet from the edge of the arroyo. Due to the elevation difference, it appears that this site will not be in danger of flooding.

Based on your recommendation that the rock slope is stable enough to protect this site from erosion, I must defer to your engineering judgement that no further analysis of the arroyo is required.

If you should have any questions, or if I may be of further assistance to you please call me.

Sincerely,

Susan Calongne

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

c: Bernie Montoya
Andrew Garcia
George Chant, Owner
File

4-14-97

Note to file L23/011

1. The limits of the FEMA floodplain should be shown on the grading plan (at 1"=40').
2. The copy of the FIRM - panel 326 - showing the site should be included on the plan. Since the base flood elevation is 5620 adjacent to this site, it appears that the floodplain is within the drainage easement.
3. The letter of 3-31-97 from the engineer states that the slope is exposed granite and that erosion will not be a problem. Without an analysis, we will have to trust the engineer's judgement that the 20,000 cfs in the arroyo will not impact this site.

- Susan Calongne

CITY OF
Albuquerque

Martin J. Chávez, Mayor

July 23,1997

Chris Weiss
C.L. Weiss Engineering Inc.
P.O. Box 97
Sandia Park, New Mexico 87047

RE: REVISED DRAINAGE PLAN FOR TIJERAS CANYON SITE (L23-D11) ENGINEER'S STAMP DATED 7/17/97 PHASE I & II

Dear Mr. Weiss:

Based on the information provided on your July 17,1997 resubmittal, the above referenced site is approved for Building Permit.

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

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM guidelines will be required.

If I can be of further assistance, please feel free to contact me at 924-3986.

C:-Andrew Garcia
File

Sincerely

Bernie J. Montoya

Bernie J. Montoya CE
Associate Engineer

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *Chant & Assoc: Tijeras Canyon Site* ZONE ATLAS / DRNG. FILE #: *L-23* Dgy

LEGAL DESCRIPTION: *Tract A-4 of the Chant Property Addition, Albuquerque, New Mexico*

CITY ADDRESS: *NA*

ENGINEERING FIRM: *C. L. Weiss Engineering, Inc.* CONTACT: *Bryan J. Bobrick*

ADDRESS: *P.O. Box 97, Sandia Park, NM 87047* PHONE: *266-3444*

OWNER: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

ARCHITECT: *Berent Groth AIA* CONTACT: *Berent Groth*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *266-6700*

SURVEYOR: *Forstbauer Surveying Co.* CONTACT: *Ron Forstbauer*

ADDRESS: *1100 Alvarado Dr. N.E. Albuq., NM 87110* PHONE: *268-2112*

CONTRACTOR FIRM: *George Chant & Associates* CONTACT: *George Chant*

ADDRESS: *P.O. Box 3529, Albuquerque, NM 87190* PHONE: *344-1633*

PRE-DESIGN MEETING:

_____YES

___X___NO

_____COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO._____

EPC NO._____

PROJ. NO._____

TYPE OF SUBMITTAL:

_____DRAINAGE REPORT

___X___DRAINAGE PLAN

_____CONCEPTUAL GRADING & DRAINAGE PLAN

___X___GRADING PLAN

_____EROSION CONTROL PLAN

_____ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT

_____PRELIMINARY PLAT

_____SITE DEVELOPMENT PLAN

_____FINAL PLAT

___X___BUILDING PERMIT

_____FOUNDATION PERMIT

_____CERT. OF OCCUPANCY

_____ROUGH GRADING PERMIT

_____GRADING / PAVING PERMIT

_____OTHER_____

RECEIVED
JUL 17 1997
HYDROLOGY SECTION

DATE RESUBMITTED: *July 17, 1997*

BY: *C.L. Weiss Engineering, Inc.*

Weiss Engineering

C.L. Weiss Engineering, Inc
Post Office Box 97
Sandia Park, N.M. 87047

Phone / Fax (505) 281-1800
Alvarado Office (505) 266-3444

July 17, 1997

Mr. Bernie Montoya
City of Albuquerque Hydrology Dept.
PO Box 1293
Albuquerque, NM 87103

RE: TIJERAS CANYON RESUBMITTAL - ENGINEERS DATE 7-17-97

Dear Mr. Montoya,

Included with this letter is a copy of the approved Drainage / Grading Plan for Tijeras Canyon site. The only revision is the A.M.A.F.C.A. sign-off by Kurt Browning.

Please don't hesitate to call me if you have questions or comments.

Sincerely,

Bryan J. Bobrick
C. L. Weiss Engineering, Inc.

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JUL 17 1997
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