Cherne, Curtis

From: MacKenzie, John
Sent: Thursday, August 14, 2014 11:35 AM
To: Cherne, Curtis
Subject: FW: American Gypsum
Attachments: DOT PdN Drainage Concurrence Ltr.pdf

His number is at the bottom of this string.

John MacKenzie, PE
City of Albuquerque
Department of Municipal Development
Engineering Division
(505) 768-3965

From: MacKenzie, John
Sent: Friday, August 01, 2014 8:02 AM
To: 'Billy McCarty'
Subject: RE: American Gypsum

Billy,

Yes, the construction will intercept off-site flows from the east and along El Pueblo Road. Attached is a letter confirming as such, signed by the DOT. All you should have to consider is the on-site generated runoff.

John MacKenzie, PE
City of Albuquerque
Department of Municipal Development
Engineering Division
(505) 768-3965

From: Billy McCarty [mailto:mccarty.b.o@gmail.com]
Sent: Thursday, July 31, 2014 5:32 PM
To: MacKenzie, John
Subject: Re: American Gypsum

Thanks for the drawings.

I am planning a site visit toward the end of next week so I can determine by visual inspection how the site splits the flow to each of the ponds so I can do the site calculations and determine the runoff to each pond in order to design the spillways. This trip will answer a lot of my questions but I understand that the street is under construction in front of this facility and I that there are offsite flows entering the site from the street. If that is the case, I need to quantify the offsite flow as well.

Do you know if this construction is going to intercept the offsite flow and divert it on a permanent bases?

Thanks

Billy McCarty

Here is the G & D for when the plant expanded in 1998. That's the only topo I know of. What's needed is for flow from the upstream basins to be measured so that spillway proposed for the ponds can be sized.

John MacKenzie, PE

City of Albuquerque

Department of Municipal Development

Engineering Division

(505) 768-3965

From: Billy McCarty [mailto:mccarty.b.o@gmail.com]
Sent: Thursday, July 31, 2014 2:06 PM
To: MacKenzie, John
Subject: American Gypsum

American Gypsum has agreed to let us do a Drainage Study for their property in order to adequately quantify the runoff into each of their retention ponds. However, I have been unable to obtain adequate topography of the entire site and offsite runoff from Tiburon St.

Can you help me obtain drainage studies and/or construction plans that identify the street runoff adjacent to the American Gypsum Site in order for me to address offsite flows entering this site?

Do you have access to 1' contour maps of this area?

I appreciate any assistance you can give me in these matters.

Thanks,

Billy O. McCarty, PE

P.O. Box 487

Reserve, NM 87830

(cell) 505-235-9588
(phone) 575-533-6574

(fax) 575-533-6631

(email) mccarty.b.o@gmail.com

City of Albuquerque

P.O. Box 1293 Albuquerque, New Mexico, 87103

Department of Municipal Development
Engineering Division

Richard J. Berry, Mayor

June 24, 2014

Mr. Michael J. Smelker, PE
Paseo and I-25 Reconstruction Project Manager
New Mexico Department of Transportation
1120 Cerrillos Road
Santa Fe, NM 87504-1149

Re: PDN/I-25 Proposed Drainage Improvements
Journal Center near El Pueblo Road and Tiburon Street

Dear Mr. Smelker:

As you know, the Engineering Division of the City's Department of Municipal Development (DMD) is in the process of designing roadway and drainage improvements on El Pueblo Road from approximately the North Diversion Channel to just east of Lorraine Court. Our EOP station coincides with your BOP station for El Pueblo Road.

The purpose of this letter is to obtain confirmation from NMDOT and the PDN Design Consultant regarding the final drainage conditions that will exist upon completion of the Paseo/I-25 project work involving El Pueblo Road. It is our understanding that due to the nature of the design/build process the final drainage documentation/reports for the PDN project will not be available for some time and this information is important so that we can continue to move forward with our project.

Over the past several months we have met with you and your design team to coordinate where the two projects overlap and to make sure that the two drainage plans are consistent with one another.

It is our understanding, via the City's representative for the PDN/I25 project, that the drainage basin upstream of Tiburon St. is being completely intercepted in Tiburon St. and routed to the new surge ponds being constructed on the southwest corner of Jefferson St. and Paseo del Norte. Secondly, it is our understanding that the surge ponds will fully contain the 100-year storm and will not discharge any flow west along El Pueblo. Finally, all the roadside and roadway flow in El Pueblo between your BOP and the surge ponds will be collected by new drop inlets east of your BOP, resulting in virtually no discharge at your BOP (see attachments).

It would be greatly appreciated if you can confirm our understanding of the final drainage conditions resulting from the PDN/I25 project by signing on the concurrence line provided below. This will allow us to move forward with the design of the storm drain within El Pueblo west of the PDN/I25 project limits.

V: /797692/Engineering Design/Correspondence/Drainage/PdN I-25 Drainage Status Letter

Please contact me if you need any further information regarding this request.

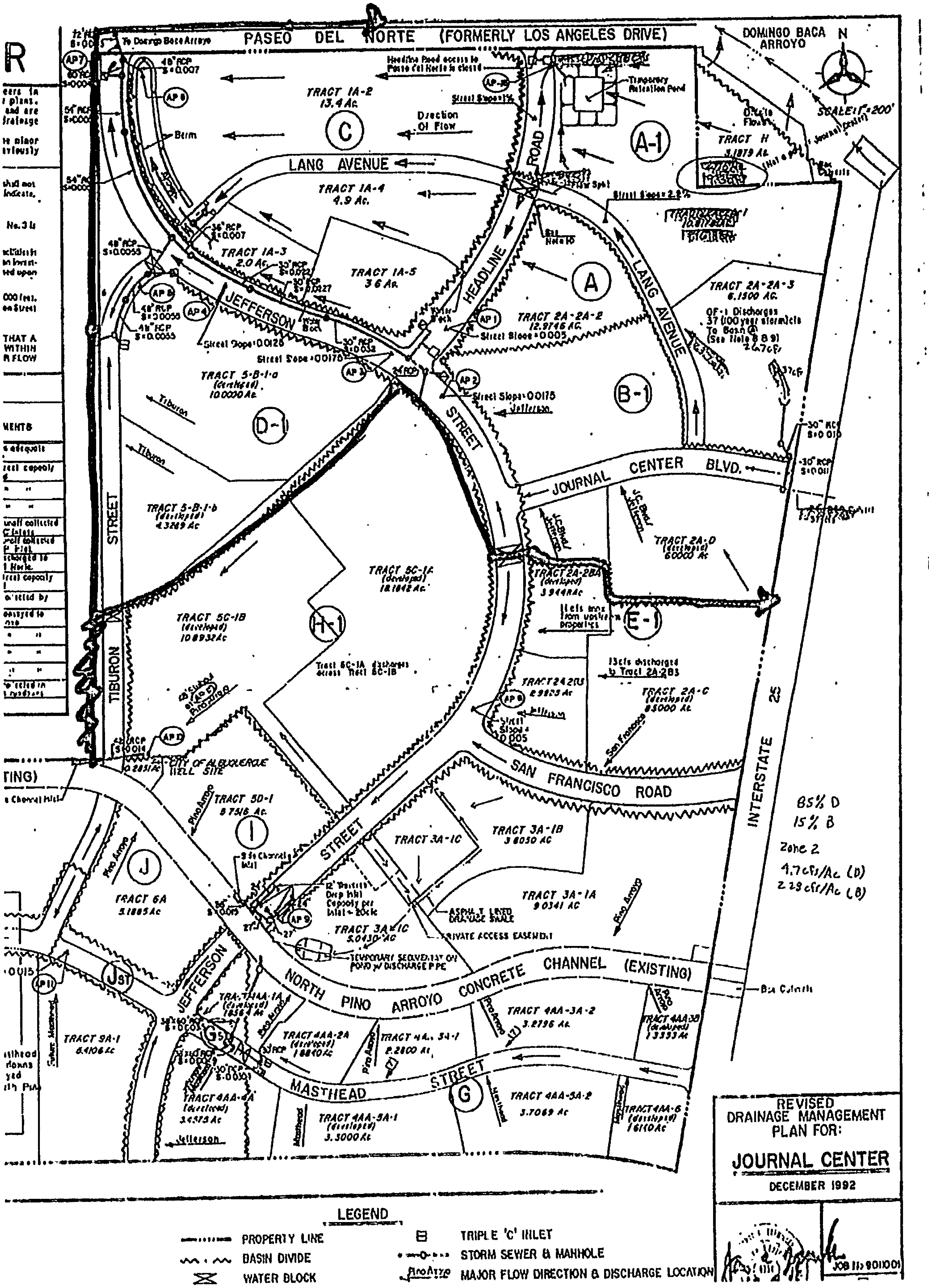
Sincerely,

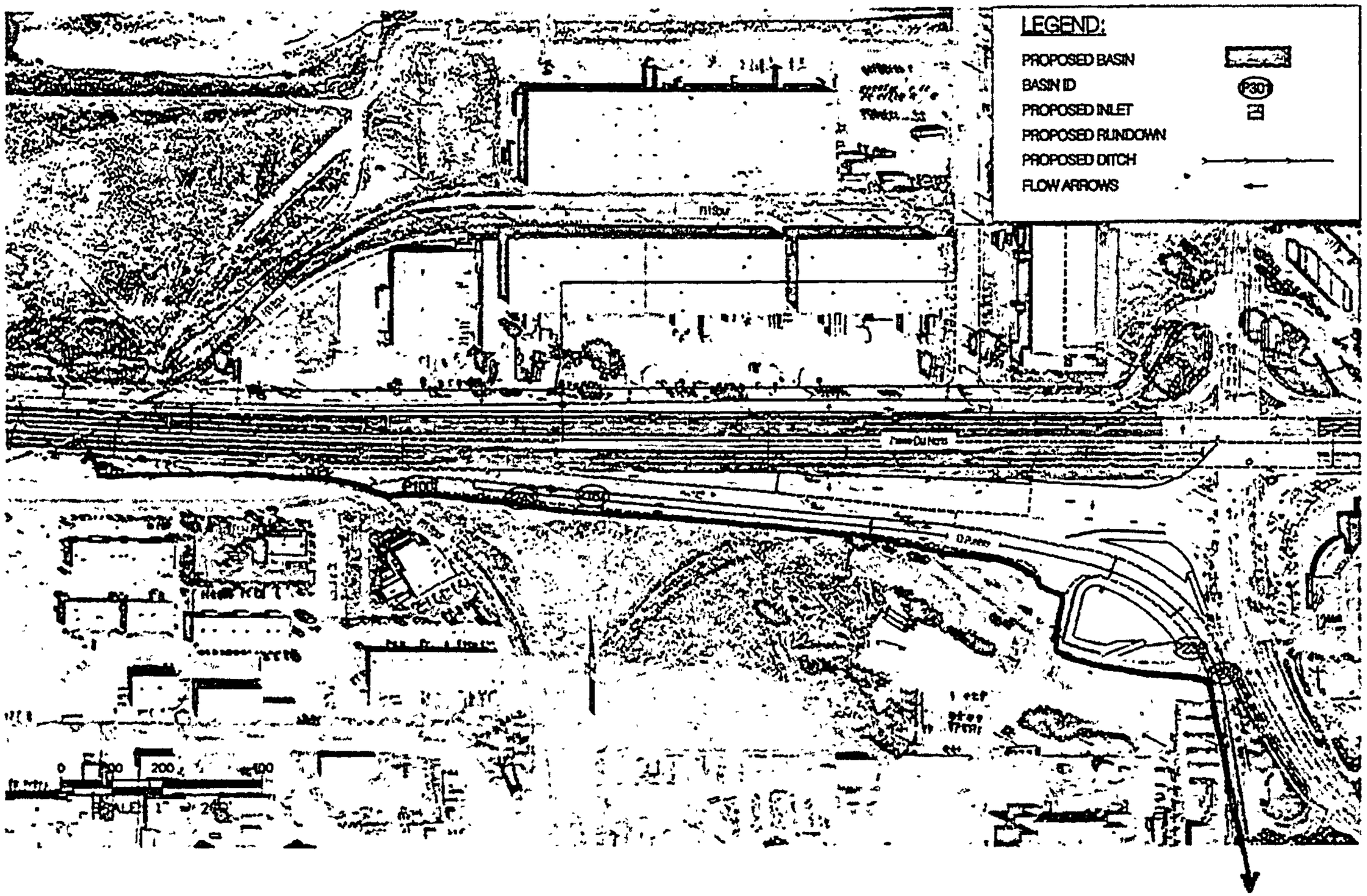
Melissa Lozoya, PE
Engineering Division Manager

6/30/14
NMDOT Concurrence Date

Attachments

cc: Nicole Friedt, PE, New Mexico Department of Transportation
Bert Thomas, PE, Bohannan Huston, Inc.


PASEO DEL NORTE (FORMERLY LOS ANGELES DRIVE)
To Domingo Baca Arroyo
DOMINGO BACA ARROYO
N
SCALE: 1" = 200'
TRACT 1A-2
13.4 Ac.
C
Direction Of Flow
Headline Road access to Paseo del Norte is closed
Temporary Retention Pond
A-1
TRACT H
Berm
48" RCP S=0.007
AP 6
AP7
LANG AVENUE
TRACT 1A-4
4.9 Ac.
TRACT 1A-3
2.0 Ac.
TRACT 1A-5
3.6 Ac.
36" RCP S=0.007
48" RCP S=0.0055
AP 5
AP 4
JEFFERSON
HEADLINE
ROAD
A
LANG AVENUE
TRACT 2A-2A-3
6.1500 AC.
TRACT 2A-2A-2
12.9746 AC.
Street Slope=0.005
AP 1
AP 2
AP 3
Street Slope=0.0125
Street Slope=0.0175
Street Slope=0.0175
TRACT 5-B-1-a
10.0000 Ac.
D-1
B-1
STREET
Tiburon
JOURNAL CENTER BLVD.
30" RCP S=0.010
30" RCP S=0.011
TRACT 5-B-1-b
4.3289 Ac
TRACT 5C-1A
18.1842 Ac.
TRACT 5C-1B
10.8932 Ac
H-1
Tract 5C-1A discharges across Tract 5C-1B
TRACT 2A-D
6.0000 Ac
TRACT 2A-2BA
3.944 Ac
E-1
13cfs discharged to Tract 2A-2B3
TRACT 2A-2B3
2.9825 Ac
TRACT 2A-C
8.5000 Ac
AP 8
TIBURON
STREET
AP 10
CITY OF ALBUQUERQUE WELL SITE
SAN FRANCISCO ROAD
INTERSTATE 25
TRACT 5D-1
8.7516 Ac.
I
J
TRACT 6A
5.1885 Ac
TRACT 3A-1C
TRACT 3A-1B
3.8050 AC
TRACT 3A-1A
9.0341 AC
ASPHALT LINED DRAINAGE SWALE
PRIVATE ACCESS EASEMENT
AP 9
TRACT 3A-1C
5.0430 AC
Pino Arroyo
85% D
15% B
Zone 2
4.7 cfs/Ac (D)
2.29 cfs/Ac (B)
NORTH PINO ARROYO CONCRETE CHANNEL (EXISTING)
Box Culverts
J ST
AP 11
JEFFERSON
TRACT 9A-1
6.4106 Ac
G 5
TRACT 4AA-2A
1.8840 Ac
TRACT 4AA-3A-1
2.2800 Ac
TRACT 4AA-3A-2
3.2796 Ac
TRACT 4AA-3B
1.3333 Ac
TRACT 4AA-4A
3.4575 Ac
MASTHEAD STREET
G
TRACT 4AA-5A-1
3.3000 Ac
TRACT 4AA-5A-2
3.7069 Ac
TRACT 4AA-6
1.6110 Ac
REVISED DRAINAGE MANAGEMENT PLAN FOR:
JOURNAL CENTER
DECEMBER 1992
JOB NO. 901001
LEGEND
PROPERTY LINE
BASIN DIVIDE
WATER BLOCK
TRIPLE 'C' INLET
STORM SEWER & MANHOLE
MAJOR FLOW DIRECTION & DISCHARGE LOCATION


LEGEND:
PROPOSED BASIN
BASIN ID
P30
PROPOSED INLET
PROPOSED RUNDOWN
PROPOSED DITCH
FLOW ARROWS
0
200
400
SCALE: 1" = 200'

AA 1003477 Hydrology Curtis Cherne 924-3986

This site was brought to my attention by DMD as they were planning their roadway and drainage improvements for El Pueblo Road. During their drainage research, it was discovered that the drainage plan for this facility was never certified by an engineer to be in compliance with their drainage plan. As it is a large site, the impacts downstream can be significant.

It is Hydrology's understanding that the City has been in contact with the property owner concerning the drainage and that the property owner has engaged an engineer to evaluate the drainage at the site. Hydrology will approve the Administrative Amendment. A grading and drainage plan will be required for Building Permit approval that should address items to bring the site into compliance with its drainage plan "To maintain peak outflow from the entire site at or below historical conditions."

CITY OF
Albuquerque

March 4, 1998

Tucker Green, P.E.
Per Se Engineering
9109 La Barranca NE
Albuquerque, NM 87111

RE: CENTEX IMPROVEMENTS (D17-D76). UPDATED GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED FEBRUARY 20, 1998.

Dear Mr. Green:

Based on the information provided on your February 19, 1998 submittal, the above referenced project is approved for Building Permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification will be required upon project completion.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

Public Works Department

City of Albuquerque

Readers #71216
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 24, 1997

Tucker Green, P.E.
Per Se Engineering
9109 La Barranca NE
Albuquerque, NM 87111

RE: CENTEX IMPROVEMENTS (D17-D76). DRAINAGE REPORT FOR BUILDING AND SO #19 PERMIT APPROVALS. ENGINEER'S STAMP DATED DECEMBER 8, 1997.

Dear Mr. Green:

Based on the information provided on your December 8, 1997 submittal, the above referenced project is approved for Building and SO #19 Permits.

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

A separate permit is required for construction within City right-of-way. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy approval, and Engineer's Certification will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Arlene Portillo
Andrew Garcia
File

D-17/

NEW MEXICO STATE HIGHWAY
AND TRANSPORTATION DEPARTMENT
AN EQUAL OPPORTUNITY EMPLOYER

December 16, 1997

Mr. Tucker Green
Per Se Engineering
9109 La Barranca NE
Albuquerque, New Mexico 87111

Subject: Centex American Gypsum Site
Paseo Del Norte at Jefferson/Tiburon
Albuquerque, New Mexico

Dear Mr. Tucker:

I received the plan and details of the pond on Centex American Gypsum site located at the southwest section of Paseo Del Norte and Jefferson Street. I do not have any further comments.

This is to confirm the drainage approval on the subject project. Please call me at 827-5323, if I can be of further assistance.

Sincerely,

Raymunda A. Van Hoven

Raymunda A. Van Hoven, PE
Drainage Engineer

XC: George Herrera
Kathy Trujillo

CITY OF
Albuquerque

Martin J. Chávez, Mayor

November 25,1997

Tucker Green
Per Se Engineering
9109 La Barranca NE
Albuquerque, New Mexico 87111

RE: DRAINAGE PLAN FOR CENTEX IMPROVEMENTS (D17-D76) ENGINEER'S PLAN DATED10/31/97

Dear Mr. Green:

Based on the information provided on your November 3,1997 submitttal, the above referenced site is approved for Foundation and Grading /Paving Permit.

Please be advised that the final refined submittal will need to be submitted and approved prior to the release of the Building Permit. Also, the concurrence from the State Highway Department must be included with the submittal.

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

C: Andrew Garcia
Tom Fulgham
File

Sincerely

Bernie J. Montoya CE
Associate Engineer

Amendment to

Drainage Report and Calculations

for

Centex Improvements

Drainage File D17-D75

The cover letter to the previously approved drainage plan & report (Engineer's stamp 12-8-97) for the entire 50+ acre site noted the possibility of decreasing the size of the proposed office addition, which affected only a small portion of the site. Now the owners have in fact decided on a somewhat smaller office addition. However, discussion with City staff as to parking layout and setback requirements led to a larger paved area at the office. The result is that the office portion of the site is "the same only different".

How different, in terms of hydrology? A comparison of proposed impervious areas between the current and previous layouts indicates an increase of approximately 1085 sf, at the expense of what would have been landscaping. According to City of Albuquerque DPM small watershed procedures), for the site's location in Rain Zone 2, the increase in 100-year peak flow rate is (1085/43560)(4.70-2.28)=0.06 cfs, a very small change. The general pattern and location of drainage from the office area remains the same.

The office area drains to the uncontrolled-discharge part of the site. However, as noted on page 2 of the approved 12-8-97 report, the controlled-discharge part of the site controls outflow from the entire site to a rate well below that required. The small increase associated with the revised office addition does not warrant re-analysis of the entire site or any change in construction.

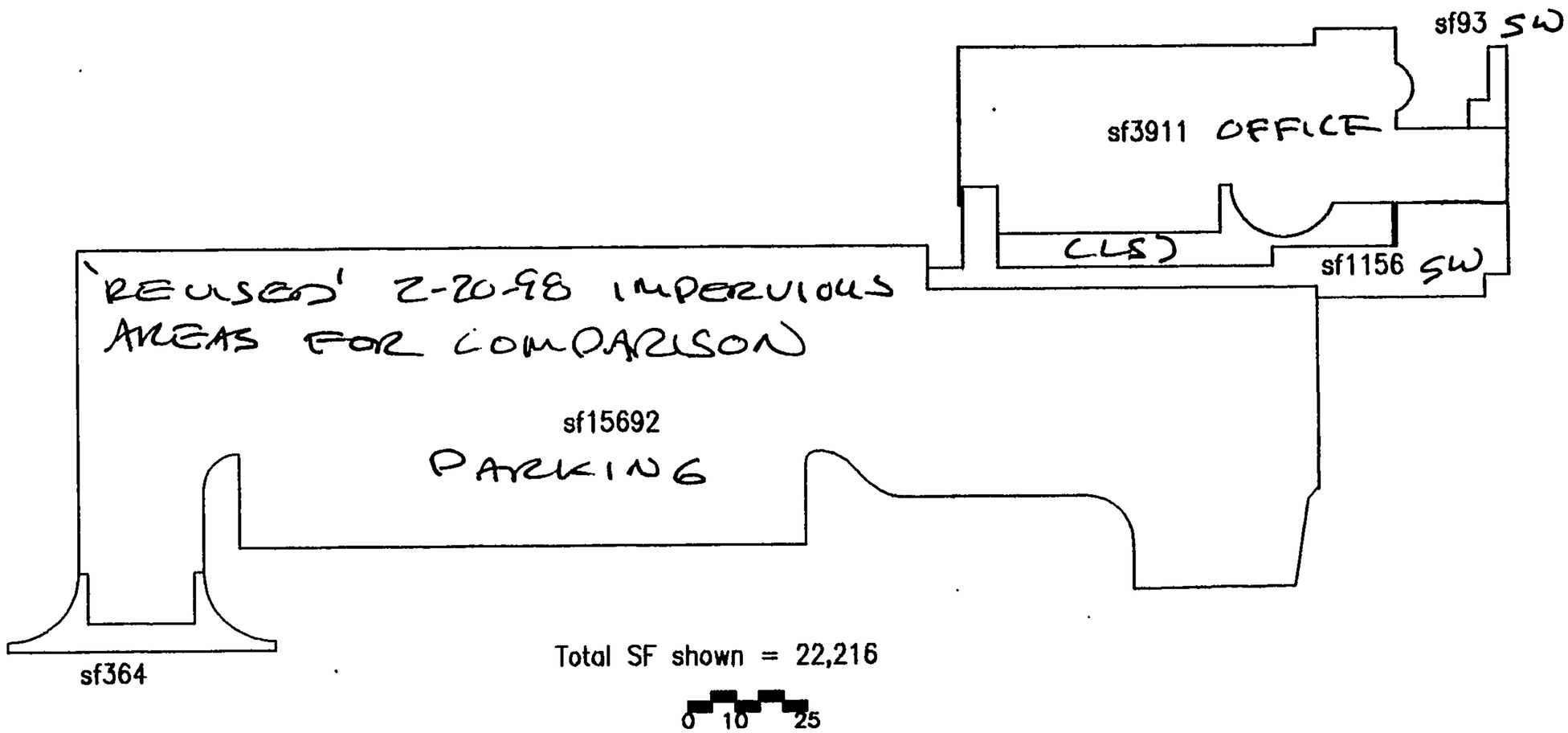
Two procedural notes: (1) Only the revised plan sheet is being submitted. (2) The plan sheet retains a signature block for S.O.-19 approval, but the only work in the City right of way is a new driveway entrance. If the signature block is not needed, please ignore it.

END OF REPORT

Tucker Green P.E.

TUCKER H. GREEN 10731 NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

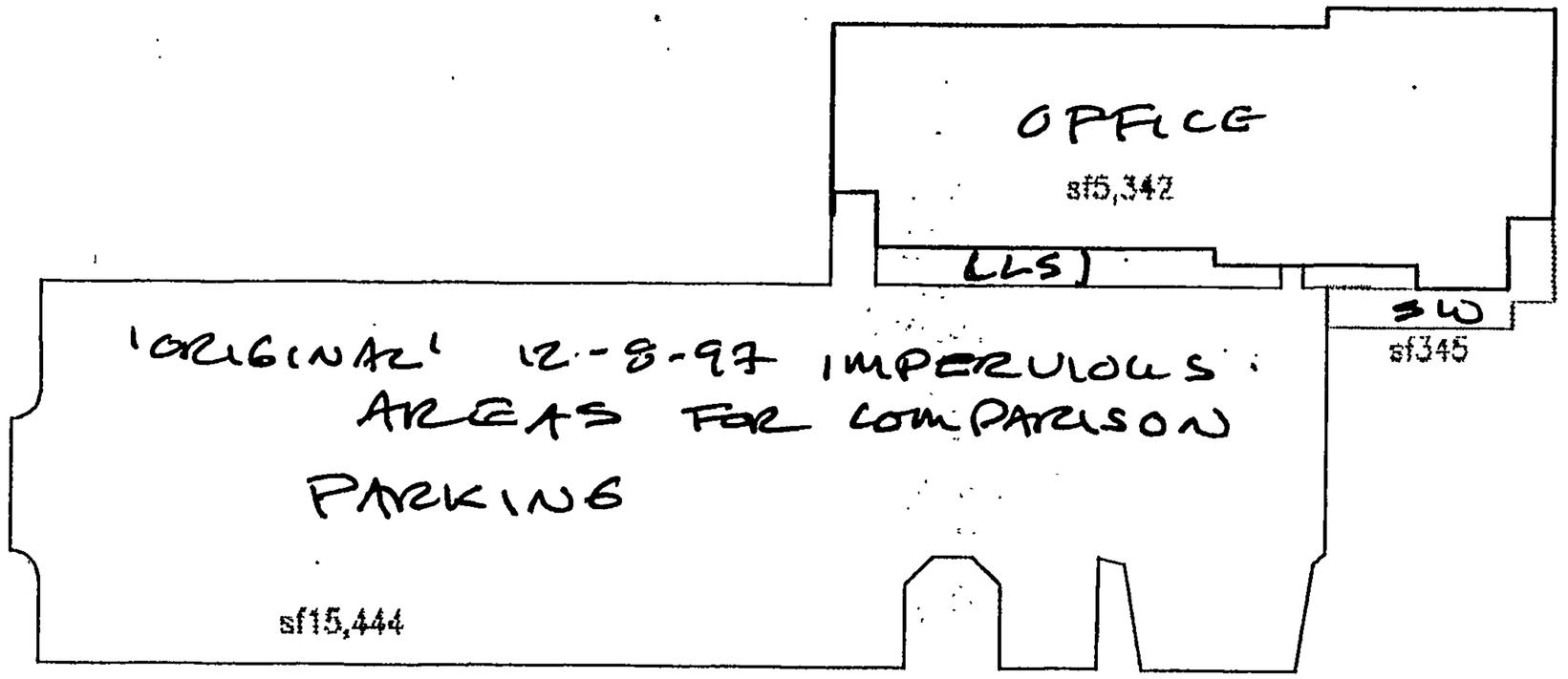
RECEIVED FEB 19 1998 HYDROLOGY SECTION



Total SF shown = 22,216

0 10 25

D:\Acad14\Ps\cxofcrv.dwg DATE: 02/19/98 TIME: 19:18 T. GREEN



Total SF this page = 21,131

0 10 25

D:\Acad14\tcxd3c.dwg DATE: 02/19/98 TIME: 22:49 T, GREEN

Drainage Report and Calculations

for

CENTEX IMPROVEMENTS

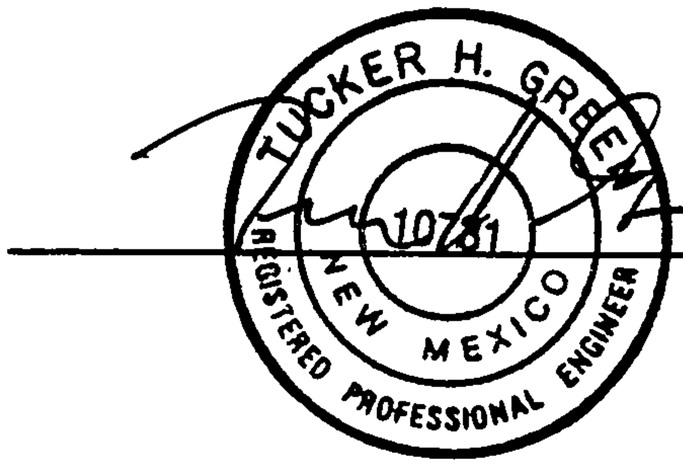
Tiburon St. NW and Paseo Del Norte South Frontage Road

Albuquerque, New Mexico

Map D-17

Prepared by Per Se Engineering

December, 1997



12-08-97

PER SE ENGINEERING

9109 La Barranca NE Albuquerque NM 87111 (505) 275-0451/ 239-7855 mobile

December 8, 1997

Mr. Bernie J. Montoya
City if Albuquerque
Public Works Dept/Hydrology
One Stop Shop/Plaza del Sol
POBox 1293
Albuquerque NM 87103

Re: Drainage Plan for Centex Improvements D17-D75

Dear Mr. Montoya or other reviewer:

This letter accompanies a drainage submittal which addresses work associated with the addition and also with the office addition. The submittal includes a complete plan set and a second copy of Sheet 8 for the use of the SO19 inspector in regard to the office addition.

There has been some discussion about decreasing the size of the office addition and the associated parking. If the change is significant a new submittal may be required for that part. The effect on the overall project would be small, and would tend to reduce both the amount and peak rate of runoff.

As you probably recall, entrance to the manufacturing plan is from the Paseo del Norte Frontage Rd, which is State of New Mexico right of way. Part of the drainage plan involves reconstructing the entrance to provide the water block required by City standards. Attached to this letter is a fax from the New Mexico State Highway Department indicating their concurrence with the drainage concepts on which this project is based. Per their request, I am submitting details of the pond to them. I will send you a copy of any further approvals from them.

Feel free to call if you have any questions regarding this submittal.

Sincerely,

Tucker Green, P.E.

DRAINAGE PLAN & REPORT for IMPROVEMENTS & ADDITIONS
at
CENTEX AMERICAN GYPSUM, ALBUQUERQUE NM

LEGAL DESCRIPTION: (Lands of) American Gypsum Company

LOCATION: Tiburon St. NW and Paseo Del Norte south frontage Rd. NW, approximately at the northwest corner of Jefferson St. and Paseo Del Norte. Albuquerque Map D-17.

FLOOD ZONE: The site is not in a 100-year flood zone (FEMA maps 136,137).

SITE DESCRIPTION: The eastern portion of the roughly 54-acre site is developed as a wallboard manufacturing plant with associated sales and office facilities. The site is served by a railroad spur, part of which separates it from a largely undeveloped PNM site to the west. Generally, the site slopes down toward the west but with a northward tendency. The result is that, in large storms, runoff tends to butt up against the railroad tracks on the west and then slide north to the frontage road. From the exit point flow is either in the road or, at least partly, in a storm drain associated with Paseo Del Norte, which is a New Mexico State Highway. In either case, runoff quickly reaches AMAFCA's North Diversion Channel, located about 1/2 mile west. With a trivial exception as noted below (water block at frontage road entrance) there is no offsite flow, the main barriers being a railroad spur on the south, existing roads with curb, gutter, and storm sewer on the east, and Paseo Del Norte improvements and grades on the north.

A portion of site - near the northeast corner of the wall board plant - is currently drained by an existing storm drain that consists of 3 inlets and a pipe that discharges to a brushy area between the current plant entrance and the perimeter fence around the manufacturing area. It is this flow that the proposed culvert will convey. There will be less flow to this system under proposed conditions than under current ones.

SPECIAL SITE HISTORY: My understanding is that, when the site was annexed to the City, there were special provisions exempting the site from some site development criteria, provided that any increment of development was less than a specified percentage. My further understanding is that the currently proposed development is well below that percentage. I have not seen the actual document.

PROPOSED DEVELOPMENT: The 4 major pieces of the project are: (1) a long (+/- 900 ft), narrow (30 ft) manufacturing addition along the east side of the wallboard plant. Most of the addition will be built over existing paved areas, but the addition does extend some 185' south of the existing building; (2) a private access road around the west side of the plant. This is for slow (10 mph) one-way truck traffic; (3) additional employee parking near this access route; and (4) an additional office building and parking revisions along Tiburon St.

A small part of the proposed development involves reconstructing the entrance from the frontage road to provide a water block per normal City requirements. There is essentially zero water block now, but then there is essentially zero offsite flow to block; the only offsite runoff comes from approximately 400 ft of frontage road pavement west of Jefferson St.

DRAINAGE CONCEPTS: Review of the Construction Plans for Paseo Del Norte, obtained from the State Highway Dept., indicates that there probably is not available capacity for a significant increase in flows, if any. Hence the decision to maintain the peak discharge from the site at or below existing conditions level.

This will be accomplished by considering the flow in two parts. Most of the site will continue to discharge freely as it does now. down toward the railroad tracks then north to the frontage road. Flow from the northeast portion of the site will be controlled in a detention pond so that the overall outflow rate from the entire site is less than or equal conditions. Although outflow from the pond will eventually reach the Frontage Road (the historical location) the initial direction of flow is away from the Frontage Road and the 'path' is overland.

To maintain peak outflow from the entire site at or below historical conditions, the allowable outflow rate from the pond is (Existing, entire site) - (Proposed, south part), or 131.14 - 104.40 = 27.64 cfs. Peak infow to the pond for the basin analyzed is 36.54 cfs per AHYMO, or slightly higher at 37.05 cfs per City "DPM" methods for small areas. Per AHYMO, the peak outfow from the pond is 8.48 cfs for an 18-inch CMP (corrugated metal pipe) outlet, or 11.61 cfs for the optional 24-inch CMP. Both of these are much less than the 27.64 allowed. Outflow is down to 0.1 cfs approximately 3 hours after the first flow reaches the pond.

The basin analyzed is about 0.6 acres larger than the area that contributes to the pond as finally designed. This amount of open field has a peak runoff of roughly 1 cfs in the 100-year, 6-hour design storm. So the actual reduction in peak flow is actually about 1 cfs less than the calculations indicate.

It is clear that the present design controls site outflow to a lower level than required. Part of the reason for providing the excess reduction was to allow for future additional development of the site without construction of additional facilities. Supporting calculations would be provided.

A word about the proposed onsite road. The road is designed with a uniform cross-slope - rather than a crown - with drainage being on the surface across the road, primarily at dip sections. The crossing at the on-site railroad spur will use treated timbers according to final details to be supplied by a contractor to Centex.

END OF REPORT

ALBUQUERQUE, NM (1/93) CRITERIA - SIMPLE PROCEDURE FOR <= 40 ACRES
PX100-6 = PRECIPITATION EXCESS FROM 100-YEAR 6-HOUR STORM
VOL10D = VOLUME OF RUNOFF FROM 100-YEAR 10-DAY STORM
TRTMT CLASS A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22.2 P A-5

****** PROJECT INFO ******
CenteX plant at SW corner of Paseo Del Norte, Jefferson, Tiburon
Total site apx 54.30 ac, Developed (east) portion apx 35.72 ac, west apx 18.58 ac

RAIN ZONE 2 SEE DPM P 22.2-2
100-YEAR PRECIPTATION (P) DEPTHS, INCHES

1 HR	6 HR	24 HR	4 DAY	10 DAY
2.01	2.35	2.75	3.30	3.95

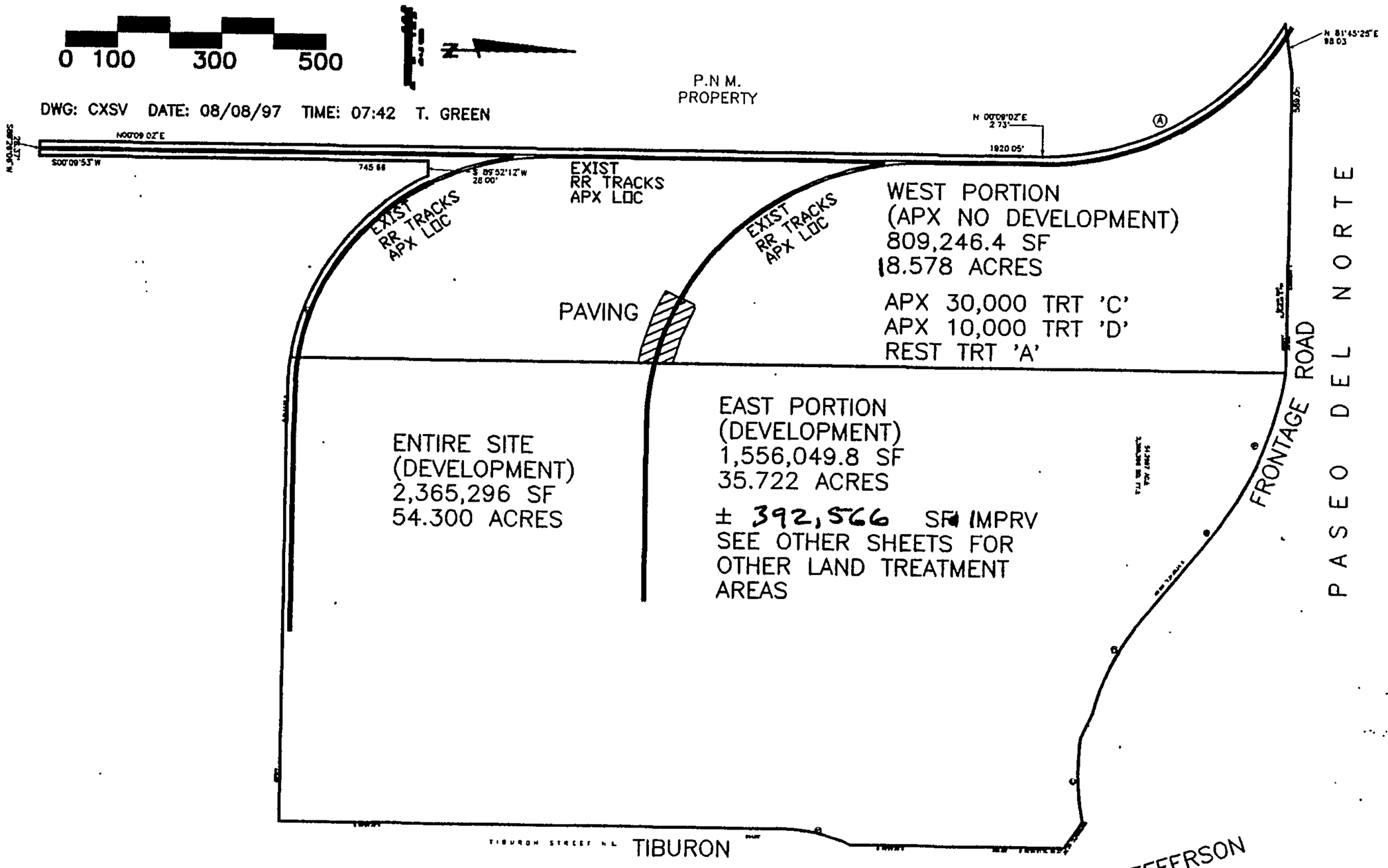
08/08/97 10:53 AM EXISTING CONDITIONS - EAST PART OF SITE SF TOT 1556050

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	691557.00	15.8760	0.53	1.56	24.767	0.701	0.701	0.701	0.701	44.44
B	40006.00	0.9184	0.78	2.28	2.094	0.060	0.060	0.060	0.060	2.57
C	431921.00	9.9155	1.13	3.14	31.135	0.934	0.934	0.934	0.934	27.76
D	392566.00	9.0121	2.12	4.70	42.357	1.592	1.893	2.306	2.794	25.23
TOTAL	1556050.00	35.7220	AVG Q/AC=	2.809	100.352	3.287	3.587	4.000	4.488	100.00
					CU FT	143170	156256	174248	195512	

08/08/97 10:53 AM WEST PART SF TOT 809246

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	769246.00	17.6595	0.53	1.56	27.549	0.780	0.780	0.780	0.780	95.06
B	0.00	0.0000	0.78	2.28	0.000	0.000	0.000	0.000	0.000	0.00
C	30000.00	0.6887	1.13	3.14	2.163	0.065	0.065	0.065	0.065	3.71
D	10000.00	0.2296	2.12	4.70	1.079	0.041	0.048	0.059	0.071	1.24
TOTAL	809246.00	18.5777	AVG Q/AC=	1.657	30.790	0.885	0.893	0.904	0.916	100.00
					CU FT	38567	38900	39358	39900	

SITE-ALL	2365296.00	54.300		4.47	131.14	4.17	4.48	4.90	5.40	200.00
						181737	195156	213607	235412	



EXISTING CONDITIONS

745.66

S 89°52'12" W
28.00'

WEST PORTION
(APX NO DEVELOPMENT)

0 100 300 500

DWG: CXSV DATE: 08/08/97 TIME: 09:39 T. GREEN

EAST PORTION
(DEVELOPMENT)

SF 'A'=
90,905

SF 'A'=
223,658 –
7,000'C' =
216,658

54.2997 AC±
2,365,296 SQ. FT±

FRONT

SF 'A'=
372,962

SF 'A'=
11,032

TIBURON STREET N.E.

TIBURON

EXISTING CONDITIONS – EAST PART OF SITE
LAND TRTMT 'A' – NATURAL/NATIVE
LAND TRTMT 'A' – APX 691,557 SF

5

745 66

S 89°52'12"W
28 00'

WEST PORTION
(APX NO DEVELOPMENT)

0 100 300 500

DWG: CXSV DATE: 08/08/97 TIME: 10:35 T. GREEN

EAST PORTION
(DEVELOPMENT)

54,2997 AC±
2,365,296 SQ. FT±

FRONTA

SF 'B'=
1,340

SF 'B'=
13,754

SF 'B'=
1,836

SF 'B'=
1,588

SF 'B'=
8,041

SF 'B'=
4,105

SF 'B'=
9,342

TIBURON STREET NE

TIBURON

EXISTING CONDITIONS – EAST PART OF SITE
LAND TRTMT 'B' – LANDSCAPING
LAND TRTMT 'B' – APX 40,006 SF

01

745.66

S 89°52'12"W
28.00'

WEST PORTION
(APX NO DEVELOPMENT)

0 100 300 500

DWG: CXSV DATE: 08/08/97 TIME: 09:39 T. GREEN

EAST PORTION
(DEVELOPMENT)

SF 'C'=
69,048

SF 'C'=
22,913

SF 'C'=
27,111

SF 'C'=
66,579

SF 'C'=
27,221

SF 'C'=
57,361

SF 'C'=
4,739

SF 'C'=
4,822

SF 'C'=
5,500

SF 'C'=
1,844

SF 'C'=
5,291

SF 'C'=
16,261

SF 'C'=
59,052

SF 'C'=
18,149

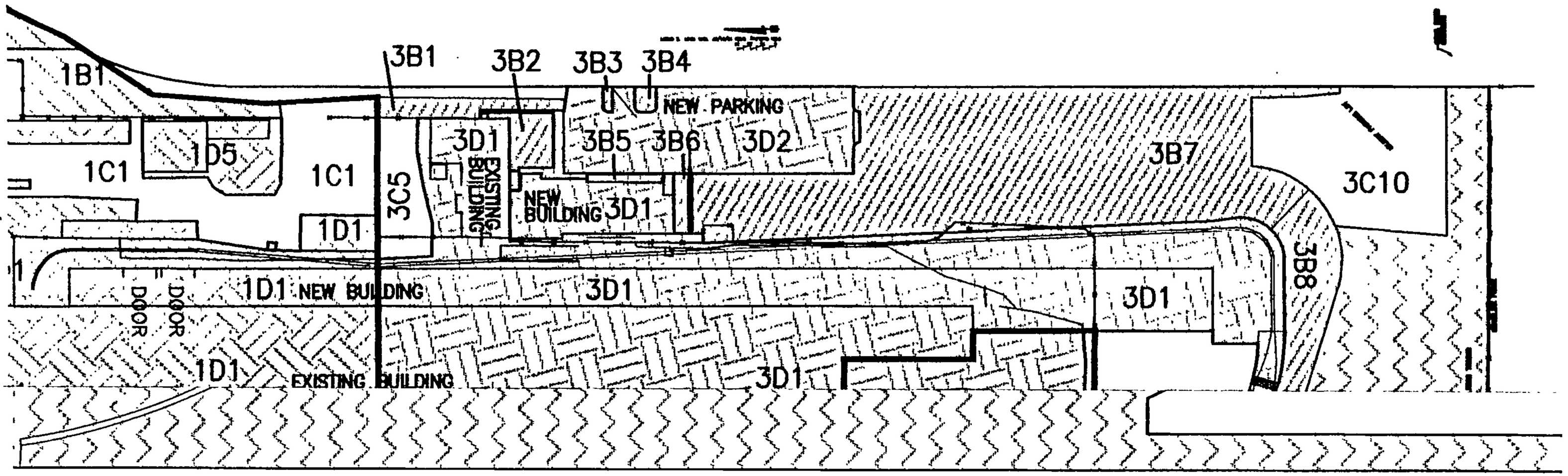
APX 7000 SF
MISC TRT 'C'

54.2997 AC±
2,365,296 SQ. FT.±

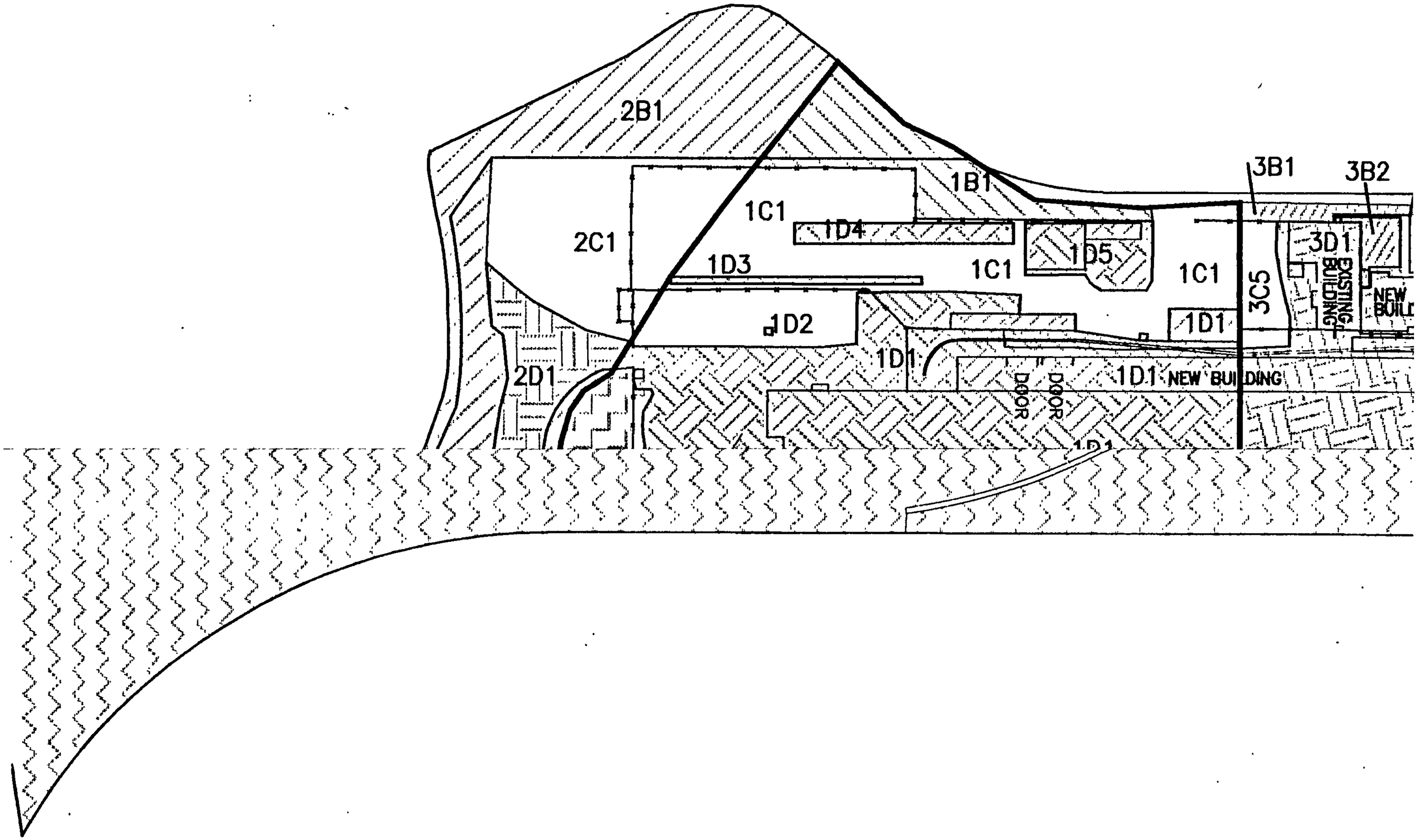
FRONTA

TIBURON STREET N.E. TIBURON

EXISTING CONDITIONS – EAST PART OF SITE
LAND TRTMT 'C' – PACKED DIRT & GRAVEL
LAND TRTMT 'C' – APX 431,921 SF


1B1
3B1
3B2
3B3
3B4
NEW PARKING
1C1
1D5
1C1
3C5
3D1
EXISTING BUILDING
3B5
3B6
3D2
3B7
3C10
NEW BUILDING
3D1
1D1
3B8
1
DOOR
DOOR
1D1
NEW BUILDING
3D1
3D1
1D1
EXISTING BUILDING
3D1

51


2B1
1B1
3B1
3B2
1C1
1D4
2C1
1D3
1C1
1D5
1C1
3C5
3D1
EXISTING BUILDING
NEW BUILD
1D2
1D1
1D1
2D1
1D1 NEW BUILDING
DOOR
DOOR
1D1

CENTEX 10-30-91

LABEL "1" AREAS

AREAS TO CULVERT - BY POLYLINE (AUTOCAD)

TOTAL: 170 873 SF = 3.923 AC

A: 14,117

B: 13,997

C: * 170 873 - Σ OTHERS = 170 873 - 129 813
= 41,060

D: 91,050 + 1,329 + 3,423 + 38
+ 5,859 = 101 699

RATIONAL ZONE 2 OPM TABLE A-9, AREA WEIGHTING

$$Q_P = \frac{(14{,}117 \times 1.56) + (13{,}997 \times 2.28) + (41060 \times 3.14) + (101{,}699 \times 4.70)}{43560 \text{ SF/AC}}$$

= 660 849.38/43560

= 15.17 CFS

* LATER VERSION OF POLYLINE GIVES
170 854 Δ = 19 SF ~ 0.11% OK

'TOTAL' ① 170,873 SF

LENTEK 10-31-97

LABEL "2" AREAS, SQUARE ~~FEET~~

- ALONG WITH LABEL "1" AREAS, TO HAVE FLOW CONTROLLED VIA DETENTION/RETENTION POND
- IN CONTRAST TO LABEL '1' AREAS, THESE FLOWS DO NOT PASS THROUGH THE CULVERT BY THE NEW PARKING AREA (204)

A:1	131,166	Σ = 131,166
B:1	46,759	Σ = 54,723
2	7,964	
C:1	25,049	Σ = 38,232
2	13,183	
D:1	14,116	Σ = 107,162
2	7,763	
3	7,579	
4	17,390	
5	73497 - (C2=13,183) = 60 314	

TOTAL (2) = 331,283 SF

LENJEK 10-30-97

* LABEL "3" AREAS, SF

A:	1	531,941	Σ = 1,197,243
	2	86,136	
	3	27,405	
	4	551 761	
B:	1	1,888	Σ = 60,039 + 11810
	2	1577	= 71,849
	3	127	
	4	329	
	5	407	
	6	541	
	7	42 62C	
	8	12 544	
	9	11,810	
C	1	44,291	Σ = 352,049
	2	21,275	
	3	39,030	
	4	57,361	
	5	4051	
	6	2=221	
	7	66 579	
	8	19,979	
	9	55,106	
	10	14,266	

* AREA "3" FLOWS TO CONTINUE TO BE FREE DISCHARGED ONTO LWEST, DOWNHILL) UNDEVELOPED PART OF SITE

CENTEX 10-30-97

LABEL "3" AREAS CONT, SI=

D: 1 102,266 Σ = 300,131

2 16,093

3 107,554

4 #6,570

5 27,643

6 ———

CONTRIBUTING TO THE PAVED PART OF THE SCALE EAST OF ℄ JUST SOUTH OF PLANT BLDG

3B1 — 3B7 Σ = 71,849 = Σ(1-9) - (8#9)
1&
= 51495

3C5 # 3C10 Σ = 4051 + 14266 = 18,317

3P1 # 3D2 Σ = 102,266 + 16093 = 118359

ADDING TO EARTH SCALE AT OL BEFORE END

3B8 # 3B9 (12,544 + (11,810) = 24,354

3C9 58,106

'TOTAL' (3) = 1,921,272 SF

LENTEX 10-31-97

COMPARE 'TOTAL' LAND TREATMENT AREAS TO SITE BOUNDARY AREAS

LABEL	1	170,873
	2	331,203
	3	1,921,272
'LABEL' TOTAL		2,423,428

SITE BOUNDARY 2,365,296 ~

LABEL - SITE = 2 423 428
- 2 365 296
58,132 SF ~

58 132 / 2 423 428 ~ .0240 ~ 2.4%

MOST OF THIS DIFFERENCE OCCURS NEAR THE NORTH EAST CORNER OF THE SITE, WHERE A MINOR AMOUNT OF LANDSCAPED AREA - APPARENTLY NOT PART OF THE SITE PROPER - CONTRIBUTES FLOW TO LABEL '2' AREAS.

NOTE THAT THE LARGER 'ADDED AREA' IS USED FOR CALCS, AND THIS IS CONSERVATIVE

TAG 10-31-97

ALBUQUERQUE, NM (1/93) CRITERIA - SIMPLE PROCEDURE FOR <= 40 ACRES
PX100-6 = PRECIPITATION EXCESS FROM 100-YEAR 6-HOUR STORM
VOL10D = VOLUME OF RUNOFF FROM 100-YEAR 10-DAY STORM
TRTMT CLASS A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22.2 P A-5

****** PROJECT INFO ******
CenteX plant at SW corner of Paseo Del Norte, Jefferson, Tiburon

PROPOSED

RAIN ZONE 2 SEE DPM P 22.2-2
100-YEAR PRECIPTATION (P) DEPTHS, INCHES

1 HR	6 HR	24 HR	4 DAY	10 DAY
2.01	2.35	2.75	3.30	3.95

10/31/97 01:42 PM PROPOSED CONDITIONS - AREAS '1': TO CULVERT & DETENTION SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	14117.00	0.3241	0.53	1.56	0.506	0.014	0.014	0.014	0.014	8.26
B	13997.00	0.3213	0.78	2.28	0.733	0.021	0.021	0.021	0.021	8.19
C	41060.00	0.9426	1.13	3.14	2.960	0.089	0.089	0.089	0.089	24.03
D	101699.00	2.3347	2.12	4.70	10.973	0.412	0.490	0.597	0.724	59.52
TOTAL	170873.00	3.9227	AVG Q/AC=	3.867	15.171	0.536	0.614	0.721	0.848	100.00
					CU FT	23367	26757	31418	36926	

Q_p TOTAL TO DETENTION
15.17 + 21.88
= 37.05 CFS

10/31/97 01:42 PM PROPOSED CONDITIONS - AREAS '2': TO DETENTION, NOT TO CULVERT SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	131166.00	3.0112	0.53	1.56	4.697	0.133	0.133	0.133	0.133	39.59
B	54723.00	1.2563	0.78	2.28	2.864	0.082	0.082	0.082	0.082	16.52
C	38232.00	0.8777	1.13	3.14	2.756	0.083	0.083	0.083	0.083	11.54
D	107162.00	2.4601	2.12	4.70	11.562	0.435	0.517	0.629	0.763	32.35
TOTAL	331283.00	7.6052	AVG Q/AC=	2.877	21.880	0.732	0.814	0.927	1.060	100.00
					CU FT	31882	35454	40366	46171	

Q_p TOTAL SITE
37.05 + 104.40
= 141.45

10/31/97 01:42 PM PROPOSED CONDITIONS - AREAS '3': DISCHARGE TO UNDEVELOPED PART SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	1197243.00	27.4849	0.53	1.56	42.876	1.214	1.214	1.214	1.214	62.32
B	71849.00	1.6494	0.78	2.28	3.761	0.107	0.107	0.107	0.107	3.74
C	352049.00	8.0819	1.13	3.14	25.377	0.761	0.761	0.761	0.761	18.32
D	300131.00	6.8901	2.12	4.70	32.383	1.217	1.447	1.763	2.136	15.62
TOTAL	1921272.00	44.1063	AVG Q/AC=	2.367	104.398	3.299	3.529	3.845	4.218	100.00
					CU FT	143723	153727	167483	183740	

Σ = : Q_p 6HR = 141.45 Compare EXIST Q 131.14

	SITE	TO DETENTION	EXIST
VOL 6HR	55,249	98,972	181737
24 HR	215,938	62,211	195156
10-DAY	266,857	83097	234512

CF Δ VOL, 24 HOUR: 215938 − 195156 (EX) → 50,782 CF
THIS IS LESS THAN 62,211 TO DETENTION.

FILE-CAN15.WQ1
CenteX plant at SW corner of Paseo Del Norte, Jefferson, Tiburon

10/31/97 01:42 PM PROPOSED CONDITIONS - MAX TO PAVED SWALE EAST OF MFG BLDG SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.53	1.56	0.000	0.000	0.000	0.000	0.000	0.00
B	51495.00	1.1822	0.78	2.28	2.695	0.077	0.077	0.077	0.077	27.37
C	18317.00	0.4205	1.13	3.14	1.320	0.040	0.040	0.040	0.040	9.73
D	118359.00	2.7171	2.12	4.70	12.771	0.480	0.571	0.695	0.842	62.90
TOTAL	188171.00	4.3198	AVG Q/AC=	3.886	16.786	0.596	0.687	0.812	0.959	100.00
					CU FT	25982	29927	35352	41763	

10/31/97 01:42 PM PROPOSED CONDITIONS - MAX TO EARTH SWALE SOUTH OF MFG BLDG SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.53	1.56	0.000	0.000	0.000	0.000	0.000	0.00
B	75849.00	1.7413	0.78	2.28	3.970	0.113	0.113	0.113	0.113	28.03
C	76423.00	1.7544	1.13	3.14	5.509	0.165	0.165	0.165	0.165	28.24
D	118359.00	2.7171	2.12	4.70	12.771	0.480	0.571	0.695	0.842	43.73
TOTAL	270631.00	6.2128	AVG Q/AC=	3.581	22.250	0.758	0.849	0.974	1.121	100.00
					CU FT	33037	36982	42407	48818	

File=CXCHANS.WQ1 - CenteX CHANnels using Manning's equation
b=bottom width (=0 for triangles), m=sideslope H:V (=0 for rectangles)
P=wetted perimeter; R=A/P; Q=flow(cfs); Ev=velocity energy; Fr=Froude no.
Es=specific energy=y+v^2/2g; Ms=specific momentum=Q^2/gA+A*ybar
** WARNING ** ORIGINAL EQNS IN COLS Y AND Z (+-). DO NOT DELETE OR ERASE **

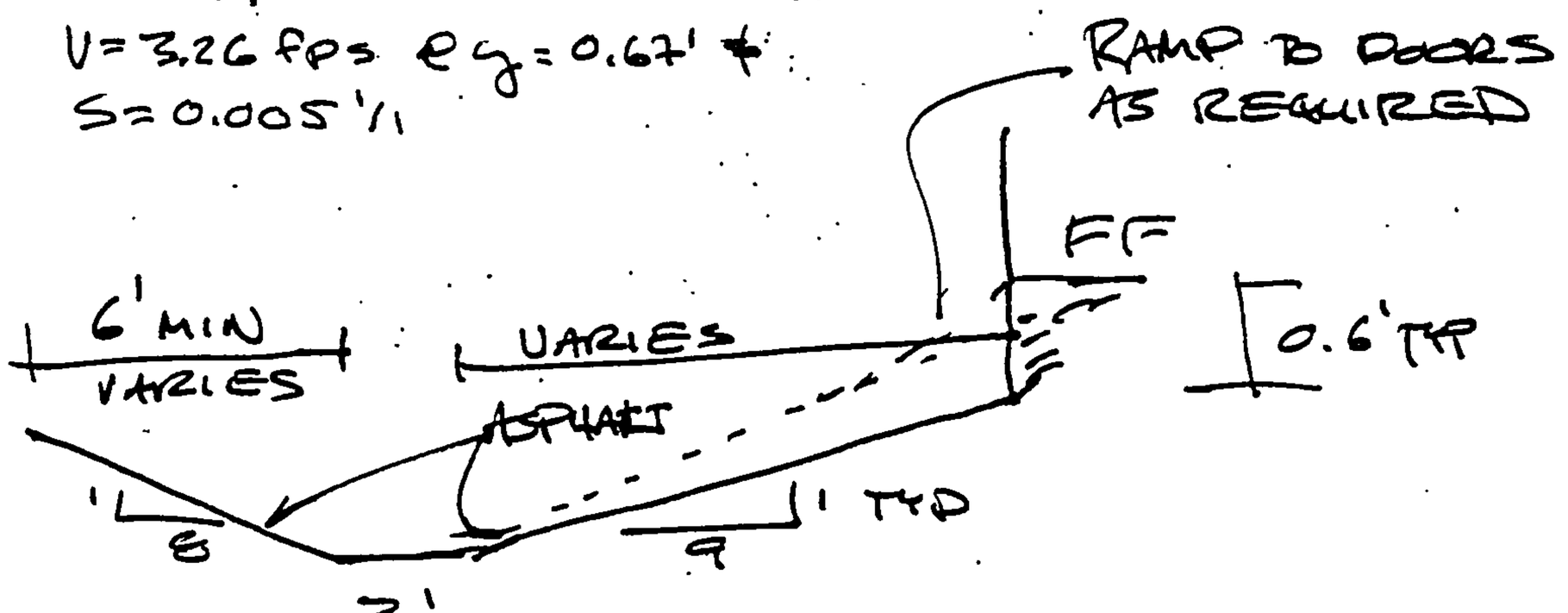
COMMENT: CENTEX AMERICAN GYPSUM WALLBOARD PLANT: ALBUQUERQUE NM

	EARTH CHANNEL SOUTH SIDE OF PLANT		ASPHALT SWALE EAST SIDE OF PLANT		EARTH CHAN
	CAPCITY	DESIGN Q	CAPCITY	DESIGN Q	CULVERT OUT
n	0.0350	0.0350	0.0170	0.0170	0.0350
S	0.00500	0.00500	0.00500	0.00500	0.00900
M1	3.0000	3.0000	8.0000	8.0000	4.0000
M2	3.0000	3.0000	9.0000	9.0000	4.0000
B	14.0000	14.0000	2.0000	2.0000	12.0000
Y	0.7500	0.6638	0.7500	0.6700	0.4820
T	18.5000	17.9830	14.7500	13.3900	15.8558
A	12.1875	10.6156	6.2813	5.1556	6.7130
P	18.7434	18.1984	14.8382	13.4688	15.9745
R	0.6502	0.5833	0.4233	0.3828	0.4202
Q	27.462	22.250	21.888	16.800	15.170
V	2.25	2.10	3.48	3.26	2.26
Ev	0.079	0.068	0.189	0.165	0.079
Es	0.83	0.73	0.94	0.84	0.56
Fr (Y)	0.46	0.45	0.71	0.70	0.57
Fr (A/T)	0.49	0.48	0.94	0.93	0.61
Ms	6.28	4.83	4.13	3.00	2.61

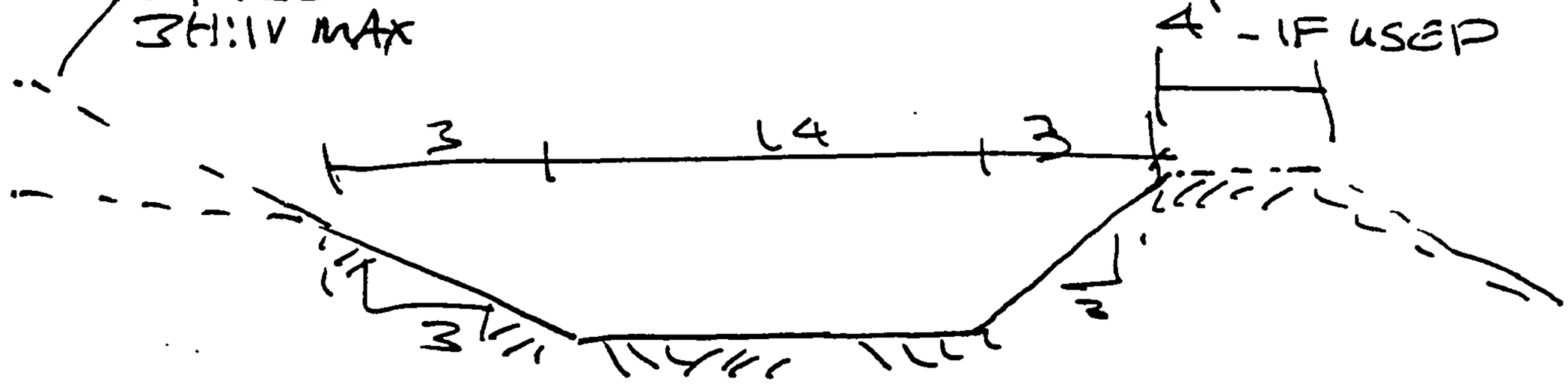
$n = .017$ $Q_P = 16.8$

$V = 3.26$ fps $e_y = 0.67'$ +

$S = 0.005$ ft/ft



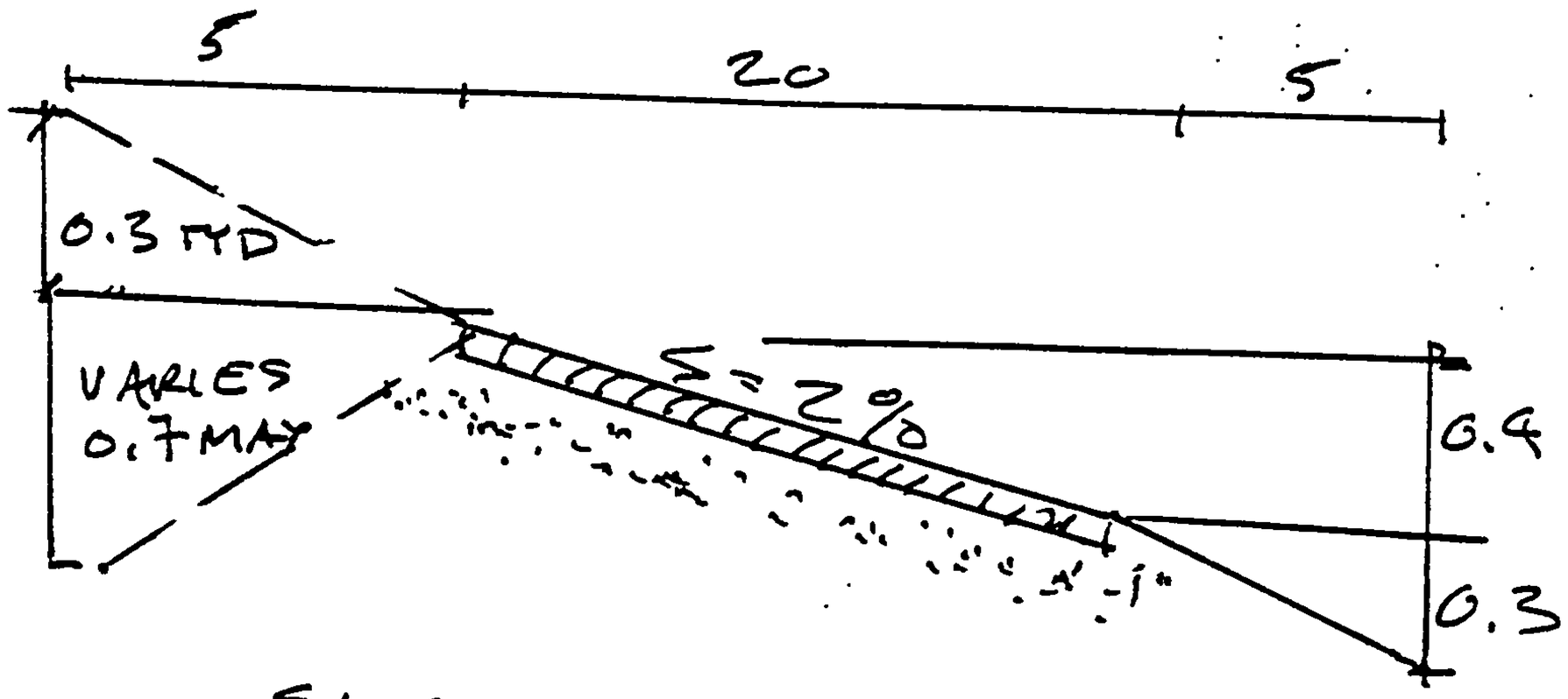
MAIN SWALE EAST OF MANUFACTURING ADDITION
NO SCALE



EARTH CHANNEL SOUTH OF BLDG
RECEIVES FLOW FROM ASPHALT SWALE

$n = .035$ $Q_P = 22.25$ $S = .005$ ft/ft

$V = 2.10$ fps @ $y = 0.66'$



SLOW SPEED PRIVATE TRUCK
PAVEMENT SECTION

3" ASPHALT OVER 8" COMPACTED
SUBGRADE NTS

Culvert Designer/Analyzer Report
CENTEX - EX SWALE NEAR FENCE

Peak Discharge Method: User-Specified			
Design Discharge	15.17 cfs	Check Discharge	20.00 cfs
Grades Model: Inverts			
Invert Upstream	13.30 ft	Invert Downstream	11.80 ft
Length	100.00 ft	Slope	0.015000 ft/ft
Drop	1.50 ft		
Headwater Model: Maximum Allowable HW			
Headwater Elevation	17.00 ft		
Tailwater Conditions: Constant Tailwater			
Tailwater Elevation	0.00 ft	SEE NOTE:	

	Name	Desc	Discharge	HW Elev	Velocity	
	Trial-2	1-24 inch Circular	15.17 cfs	15.83 ft	6.44 ft/s	
x	Trial-1	1-24 inch Circular	15.17 cfs	15.65 ft	6.44 ft/s	— USE
	Trial-3	1-24 inch Circular	20.00 cfs	17.19 ft	7.40 ft/s	
	Trial-4	1-24 inch Circular	20.00 cfs	17.44 ft	7.40 ft/s	

TAILWATER NOTE:

SEPARATE CALCS (NOT SHOWN) FOR TAILWATER DEPTHS UP TO 2 FT (2 TO TOP OF PIPE) SHOWED NO EFFECT ON HEADWATER REQUIRED.

ACTUAL TAILWATER DEPTH, AS FLOW EXPANDS INTO NTE EARTH CHANNEL, WILL BE CONSIDERABLY LESS THAN 2', ON THE ORDER OF 6 INCHES AT NORMAL DEPTH FOR GRADING SHOWN.

Culvert Designer/Analyzer Report
CENTEX - EX SWALE NEAR FENCE

Design:Trial-1

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	17.00 ft	Storm Event	Design
Computed Headwater Elevation	15.65 ft	Discharge	15.17 cfs
Headwater Depth/ Height	1.18	Tailwater Elevation	0.00 ft
Inlet Control HW Elev	15.52 ft	Control Type	Outlet Control
Outlet Control HW Elev	15.65 ft		

Grades			
Upstream Invert	13.30 ft	Downstream Invert	11.80 ft
Length	100.00 ft	Constructed Slope	0.015000 ft/ft

Hydraulic Profile			
Profile	M2	Depth, Downstream	1.40 ft
Slope Type	Mild	Normal Depth	1.66 ft
Flow Regime	Subcritical	Critical Depth	1.40 ft
Velocity Downstream	6.44 ft/s	Critical Slope	0.021699 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev	15.65 ft	Upstream Velocity Head	0.46 ft
Ke	0.50	Entrance Loss	0.23 ft

Inlet Control Properties			
Inlet Control HW Elev	15.52 ft	Flow Control	Unsubmerged
Inlet Type	Headwall	Area Full	3.1 ft²
K	*0.00780*	*HDS 5 Chart*	2
M	2.00000	HDS 5 Scale	1
C	0.03790	Equation Form	1
Y	0.69000		

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Culvert Designer/Analyzer Report
CENTEX - EX SWALE NEAR FENCE

Design:Trial-2

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	17.00 ft	Storm Event	Design
Computed Headwater Elevation	15.83 ft	Discharge	15.17 cfs
Headwater Depth/ Height	1.27	Tailwater Elevation	0.00 ft
Inlet Control HW Elev	15.76 ft	Control Type	Outlet Control
Outlet Control HW Elev	15.83 ft		

Grades			
Upstream Invert	13.30 ft	Downstream Invert	11.80 ft
Length	100.00 ft	Constructed Slope	0.015000 ft/ft

Hydraulic Profile			
Profile	M2	Depth, Downstream	1.40 ft
Slope Type	Mild	Normal Depth	1.66 ft
Flow Regime	Subcritical	Critical Depth	1.40 ft
Velocity Downstream	6.44 ft/s	Critical Slope	0.021699 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev	15.83 ft	Upstream Velocity Head	0.46 ft
Ke	0.90	Entrance Loss	0.41 ft

Inlet Control Properties			
Inlet Control HW Elev	15.76 ft	Flow Control	Unsubmerged
Inlet Type	Projecting	Area Full	3.1 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

Culvert Designer/Analyzer Report
CENTEX - EX SWALE NEAR FENCE

Design:Trial-3

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	17.00 ft	Storm Event	Check
Computed Headwater Elevation	17.19 ft	Discharge	20.00 cfs
Headwater Depth/ Height	1.94	Tailwater Elevation	0.00 ft
Inlet Control HW Elev	16.20 ft	Control Type	Outlet Control
Outlet Control HW Elev	17.19 ft		

Grades			
Upstream Invert	13.30 ft	Downstream Invert	11.80 ft
Length	100.00 ft	Constructed Slope	0.015000 ft/ft

Hydraulic Profile			
Profile	CompositeM2Pressure	Depth, Downstream	1.61 ft
Slope Type	Mild	Normal Depth	N/A ft
Flow Regime	Subcritical	Critical Depth	1.61 ft
Velocity Downstream	7.40 ft/s	Critical Slope	0.027674 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev	17.19 ft	Upstream Velocity Head	0.63 ft
Ke	0.50	Entrance Loss	0.31 ft

Inlet Control Properties			
Inlet Control HW Elev	16.20 ft	Flow Control	Submerged
Inlet Type	Headwall	Area Full	3.1 ft²
K	0.00780	HDS 5 Chart	2
M	2.00000	HDS 5 Scale	1
C	0.03790	Equation Form	1
Y	0.69000		

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Culvert Designer/Analyzer Report
CENTEX - EX SWALE NEAR FENCE

Design:Trial-4

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	17.00 ft	Storm Event	Check
Computed Headwater Elevation	17.44 ft	Discharge	20.00 cfs
Headwater Depth/ Height	2.07	Tailwater Elevation	0.00 ft
Inlet Control HW Elev	16.61 ft	Control Type	Outlet Control
Outlet Control HW Elev	17.44 ft		

Grades			
Upstream Invert	13.30 ft	Downstream Invert	11.80 ft
Length	100.00 ft	Constructed Slope	0.015000 ft/ft

Hydraulic Profile			
Profile	CompositeM2Pressure	Depth, Downstream	1.61 ft
Slope Type	Mild	Normal Depth	N/A ft
Flow Regime	Subcritical	Critical Depth	1.61 ft
Velocity Downstream	7.40 ft/s	Critical Slope	0.027674 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev	17.44 ft	Upstream Velocity Head	0.63 ft
Ke	0.90	Entrance Loss	0.57 ft

Inlet Control Properties			
Inlet Control HW Elev	16.61 ft	Flow Control	Submerged
Inlet Type	Projecting	Area Full	3.1 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

Per Se Engineering
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

ALBUQUERQUE, NM (1/93) CRITERIA - SIMPLE PROCEDURE FOR <= 40 ACRES
PX100-6 = PRECIPITATION EXCESS FROM 100-YEAR 6-HOUR STORM
VOL10D = VOLUME OF RUNOFF FROM 100-YEAR 10-DAY STORM
TRTMT CLASS A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22.2 P A-5

****** PROJECT INFO ******
CenteX plant at SW corner of Paseo Del Norte, Jefferson, Tiburon

RAIN ZONE 2 SEE DPM P 22.2-2
100-YEAR PRECIPTATION (P) DEPTHS, INCHES

1 HR	6 HR	24 HR	4 DAY	10 DAY
2.01	2.35	2.75	3.30	3.95

11/24/97 05:39 PM PROPOSED CONDITIONS - AREAS '1': TO CULVERT & DETENTION SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	14117.00	0.3241	0.53	1.56	0.506	0.014	0.014	0.014	0.014	8.26
B	13997.00	0.3213	0.78	2.28	0.733	0.021	0.021	0.021	0.021	8.19
C	41060.00	0.9426	1.13	3.14	2.960	0.089	0.089	0.089	0.089	24.03
D	101699.00	2.3347	2.12	4.70	10.973	0.412	0.490	0.597	0.724	59.52
TOTAL	170873.00	3.9227	AVG Q/AC=	3.867	15.171	0.536	0.614	0.721	0.848	100.00
					CU FT	23367	26757	31418	36926	

11/24/97 05:39 PM PROPOSED CONDITIONS - AREAS '2': TO DETENTION, NOT TO CULVERT SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	131166.00	3.0112	0.53	1.56	4.697	0.133	0.133	0.133	0.133	39.59
B	54723.00	1.2563	0.78	2.28	2.864	0.082	0.082	0.082	0.082	16.52
C	38232.00	0.8777	1.13	3.14	2.756	0.083	0.083	0.083	0.083	11.54
D	107162.00	2.4601	2.12	4.70	11.562	0.435	0.517	0.629	0.763	32.35
TOTAL	331283.00	7.6052	AVG Q/AC=	2.877	21.880	0.732	0.814	0.927	1.060	100.00
					CU FT	31882	35454	40366	46171	

11/24/97 05:39 PM PROPOSED CONDITIONS - TOTAL TO DETENTIONT SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	145283.00	3.3352	0.53	1.56	5.203	0.147	0.147	0.147	0.147	28.93
B	68720.00	1.5776	0.78	2.28	3.597	0.103	0.103	0.103	0.103	13.68
C	79292.00	1.8203	1.13	3.14	5.716	0.171	0.171	0.171	0.171	15.79
D	208861.00	4.7948	2.12	4.70	22.536	0.847	1.007	1.227	1.486	41.59
TOTAL	502156.00	11.5279	AVG Q/AC=	3.214	37.051	1.268	1.428	1.648	1.908	100.00
					CU FT	55249	62211	71784	83097	

11.5279 AC = 0.018015 SQ MI

NOTE: TOP 2 CASES THIS PAGE SAME AS THE 10-31-97 RUN INCLUDED IN THE FOUNDATION PERMIT SUBMITTAL, & ALSO REPRINTED EARLIER THIS SUBMITTAL

CENTEX 11-17-97

GET ALLOWABLE OUTFLOW FOR DETENTION POND

= (EXISTING, ENTIRE SITE) - (PROPOSED, SOUTH PART)

= (131.14) - (104.40)
(CXHYD.WQ1 8-8-97) (CXHYD.WQ1 10-31-97)

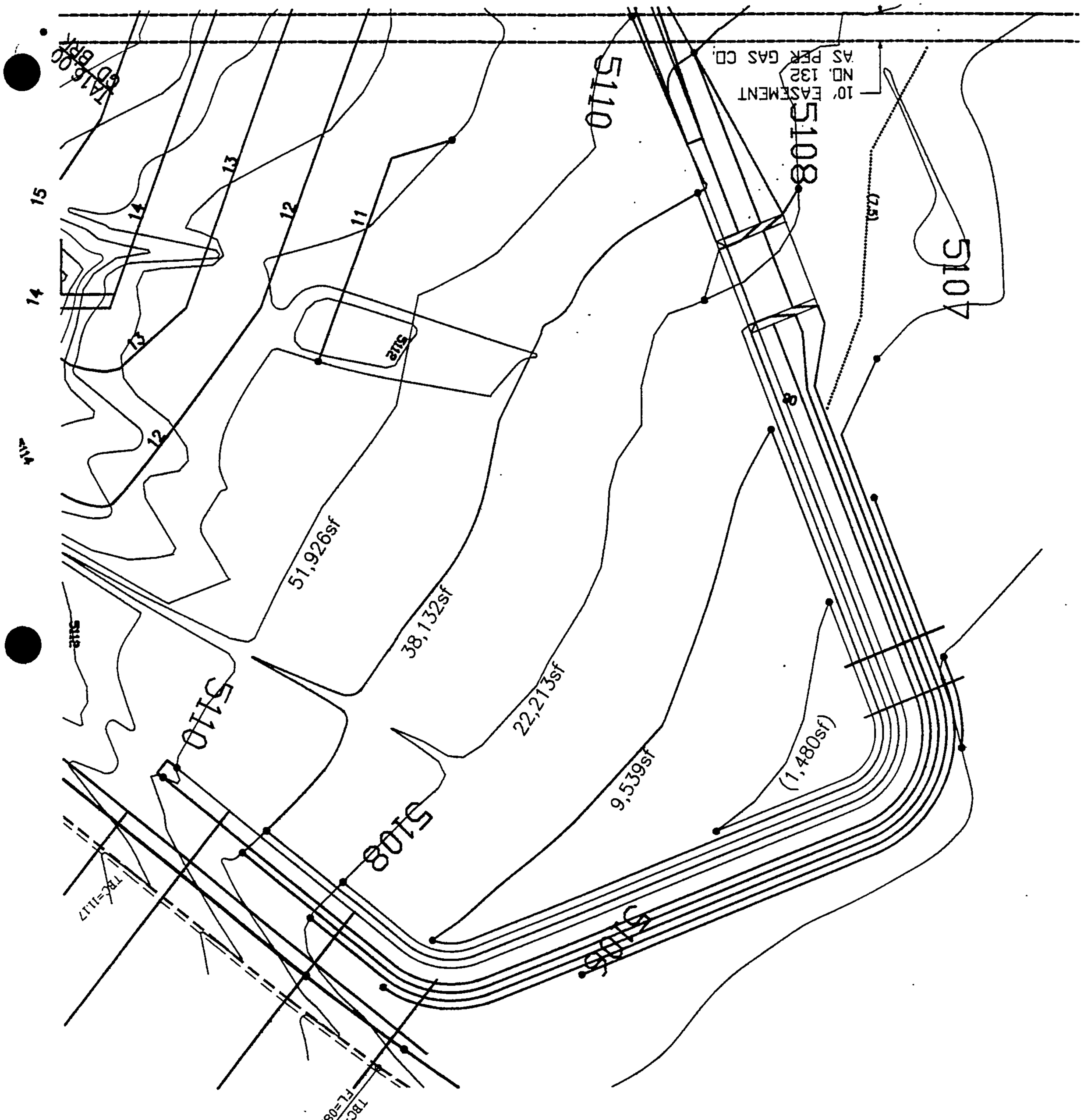
= 26.74 CFS

↳ INFLOW TO DETENTION POND (CXHYD.WQ1 10-31-97)

37.05 CFS, ~~peak~~ 100-yr, 6hr

6 HR VOLUME 23367 + 31882 = 55,249 CF ~ 1.27 AF

24 HR " 26757 + 35454 = 62,211 CF ~ 1.43 AF



DWG: cxpond.dwg DATE: 11/24/97 TIME: 17:11 T. GREEN

AREAS ENCLOSED BY CONTOUR LINES
EG CONTOUR 5018 ENCLOSES 22,213 SF

FILE=CXPOND.WQ1 11/24/97 05:24 PM
CENTEX DETENTION POND - 4600 PASEO DEL NORTE, ALBUQUERQUE

ELEV FT	AREA	PYRAMID DVOL CONE	VOL FT^3	VOL AC-FT	AV END AREA DVOL AV AREA	VOL FT^3	VOL AC-FT
10	51,926	44,852	95,030	2.1816	45,029	96,587	2.2173
9	38,132	29,816	50,178	1.1519	30,173	51,558	1.1836
8	22,213	15,436	20,362	0.4674	15,876	21,386	0.4909
7	9,539	4,925	4,925	0.1131	5,510	5,510	0.1265
6	1,480						

POND OUTLET. CULVERTS

Rating Table Report
Pond 1

CENTEX

Range Data:

	Minimum	Maximum	Increment
Allowable HW Eleva	6.00	10.00	0.50 ft

HW Elev (ft)	Trial-1 - Discharge (cfs)	Trial-2 - Discharge (cfs)
6.00	0.00	0.00
6.50	0.68	0.79
7.00	2.47	2.91
7.50	5.10	6.15
8.00	7.82	10.31
8.50	9.08	14.88
9.00	10.14	18.30
9.50	11.14	20.23
10.00	12.08	22.10

AC-FT ELEV

0 6

0.1365 7

0.4909 8

1.1836 9

2.2173 10

18" CMP 24" CMP

BOTH PIPES : 1.5% SLOPE
: PROJECTING ENTRANCE
: INVERT @ 6.00 NOMINAL

Culvert Design Report
Trial-1

Solve For: Headwater Elevation CENTEX POND – 18" CMP – MAIN DESIGN

Culvert Summary

Allowable HW Elevation	N/A ft	Storm Event	Design
Computed Headwater Elevation	8.23 ft	Discharge	8.48 cfs
Headwater Depth/ Height	1.49	Tailwater Elevation	N/A ft
Inlet Control HW Elev	8.09 ft	Control Type	Outlet Control
Outlet Control HW Elev	8.23 ft		

Grades

Upstream Invert	6.00 ft	Downstream Invert	5.40 ft
Length	40.00 ft	Constructed Slope	0.015000 ft/ft

Hydraulic Profile

Profile	CompositeM2Pressure	Depth, Downstream	1.13 ft
Slope Type	Mild	Normal Depth	N/A ft
Flow Regime	Subcritical	Critical Depth	1.13 ft
Velocity Downstream	5.95 ft/s	Critical Slope	0.026554 ft/ft

Section

Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	1.50 ft
Section Size	18 inch	Rise	1.50 ft
Number Sections	1		

Outlet Control Properties

Outlet Control HW Elev	8.23 ft	Upstream Velocity Head	0.36 ft
Ke	0.90	Entrance Loss	0.32 ft

Inlet Control Properties

Inlet Control HW Elev	8.09 ft	Flow Control	Transition
Inlet Type	Projecting	Area Full	1.8 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

NOTE: Q design = 8.48 cfs taken from AHYMO run, which used a Haestad Methods Culvert Master (this program) rating curve as part of its input. AHYMO gave slightly higher required headwater – 8.28 cf comp to 8.23. Close enough – OK.

Culvert Design Report
Trial-2

Solve For: Headwater Elevation CENTEX – 24" CMP – OPTIONAL

Culvert Summary

Allowable HW Elevation	N/A ft	Storm Event	Check
Computed Headwater Elevation	8.14 ft	Discharge	11.61 cfs
Headwater Depth/ Height	1.07	Tailwater Elevation	N/A ft
Inlet Control HW Elev	8.01 ft	Control Type	Outlet Control
Outlet Control HW Elev	8.14 ft		

Grades

Upstream Invert	6.00 ft	Downstream Invert	5.40 ft
Length	40.00 ft	Constructed Slope	0.015000 ft/ft

Hydraulic Profile

Profile	M2	Depth, Downstream	1.22 ft
Slope Type	Mild	Normal Depth	1.32 ft
Flow Regime	Subcritical	Critical Depth	1.22 ft
Velocity Downstream	5.77 ft/s	Critical Slope	0.018759 ft/ft

Section

Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties

Outlet Control HW Elev	8.14 ft	Upstream Velocity Head	0.43 ft
Ke	0.90	Entrance Loss	0.39 ft

Inlet Control Properties

Inlet Control HW Elev	8.01 ft	Flow Control	Unsubmerged
Inlet Type	Projecting	Area Full	3.1 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

NOTE: Q design = 11.61 cfs from AHYMO run based partly on rating curve from this Culvert Master Program. At Qp, headwater elev AHYMO was 8.16' comp to 8.14' here. OK
HW elev 8.16' ⟹ HW depth = 2.00'

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 11/24/1997
         START TIME (HR:MIN:SEC) = 19:14:38     USER NO.= PERSEENG.194
         INPUT FILE = CXPOND.DAT

*                CONTROL CODES AT START = 027 038 107 050 083
*                0 0 0 0 0  0 0 0 0 0   0 0 0 0 0
*                CONTROL CODES AT END = 0 0 0 0 0
*                0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* CONTROL CODES ABOVE FOR HP DESKJET 540 INKJET PRINTER, START IN COL 21
*
*C PRINT CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; 3,5,10,20 SIMILAR
*C RATING CURVE ID NEGATIVE => COMPUTE BUT NOT PRINT RATING CURVE
*C RATING CURVE n NEGATIVE => FLOODPLAIN SLOPE, n POSITIVE => CHANNEL SLOPE
*S
*S FILE CXPOND = CenteX POND, DETENTION POND AT 4600 PASEO DEL NORTE, ALBQ NM
*S RAIN ZONE 2 FOR SMALL WATERSHED METHODS - USE HERE
*S 100-yr 6hr STORM
*S
*S FOR RESERVOIR ROUTING, NEED Qout AT LEAST 10.31cfs LESS THAN Qin
*C
*S FLOW IS **NOT** BULKED FOR SEDIMENT, UNLESS SPECIFICALLY NOTED.
*C
*C BASIN & CHANNEL ROUTING PARAMETERS REFLECT THE JUDGMENT OF THE ENGINEER,
*C AND MAY DIFFER FROM OTHER STUDIES IN THE AREA.
*C
*C REVISION NOTES: ORIGINAL FILE CREATED 11-24-97 BY TUCKER GREEN P.E.
*C
********************************************************************************
* RAINFALLS PER ALBUQUERQUE NM DPM - COMMENT OUT THOSE THAT DON'T APPLY
* TYPE 1 IS 6-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C5)
*    FOR 6-HR USE DT = 0.033333 HR = 2 MINUTES
* TYPE 2 IS 24-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C6)
*    FOR 24-HR USE DT = 0.0500 HR = 5 MINUTES
* RAIN QUARTER = 0.0 EXCEPT FOR TYPE 3 (6-HR PMP: SEE AHYMO MANUAL)
*
*** !!! RAINFALL 100YR-TYPE2 NOT ADJUSTED, BUT NOT USED, EITHER. !!!
*** !!! RAINFALL 10YR-TYPE1 NOT ADJUSTED, BUT NOT USED, EITHER. !!!
*
********************************************************************************
*                        RAINFALL AMOUNTS, INCHES
* RAINFALL              HUNDRED  TYPE= 2  RAIN QUARTER= 0.0   RAIN ONE= 2.23
*                       RAIN SIX= 2.95   RAIN DAY= 3.76   DT= .033333 HR
RAINFALL              HUNDRED  TYPE= 1    0.0   2.01   2.35   2.75   0.033333

              COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
              DT =    .033333 HOURS       END TIME =     5.999940 HOURS
                 .0000   .0016   .0033   .0049   .0066   .0084   .0102
                 .0120   .0139   .0158   .0178   .0199   .0219   .0241
                 .0263   .0286   .0309   .0333   .0358   .0384   .0411
                 .0439   .0467   .0497   .0529   .0561   .0596   .0631
                 .0669   .0709   .0751   .0807   .0866   .0930   .1066
                 .1372   .1842   .2517   .3438   .4648   .6192   .8114
                1.0459  1.2628  1.3536  1.4303  1.4985  1.5605  1.6176
                1.6706  1.7202  1.7667  1.8104  1.8516  1.8906  1.9274
                1.9624  1.9955  2.0269  2.0568  2.0851  2.0915  2.0976
                2.1034  2.1088  2.1141  2.1191  2.1239  2.1285  2.1330
                2.1373  2.1414  2.1455  2.1494  2.1532  2.1569  2.1604
                2.1639  2.1673  2.1707  2.1739  2.1771  2.1802  2.1832
                2.1862  2.1891  2.1920  2.1948  2.1975  2.2002  2.2028
                2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                2.2225  2.2248  2.2271  2.2293  2.2315  2.2336  2.2358
                2.2379  2.2400  2.2420  2.2440  2.2460  2.2480  2.2500
                2.2519  2.2538  2.2557  2.2576  2.2594  2.2613  2.2631
                2.2649  2.2666  2.2684  2.2701  2.2718  2.2736  2.2752
```

10⁴
*Qp POND IN 36.54 cfs
Qp POND OUT 18 8.48
Δ = 28.06 ac
WS ELEV @ 8.28'
(y = 2.28')

24'
Qp POND IN 36.54
Qp POND Qout 24 11.61
Δ = 24.93 ac
WS ELEV @ 8.16'
(y = 2.16')

* AHYMO GIVES SLIGHTLY SMALLER Qpeaks THAN DPM SMALL WATERSHED METHOD, WHICH GAVE ± 37.05 CFS FOR SAME AREA

```
2.2769  2.2786  2.2802  2.2818  2.2834  2.2850  2.2866
2.2882  2.2897  2.2913  2.2928  2.2943  2.2958  2.2973
2.2988  2.3002  2.3017  2.3031  2.3046  2.3060  2.3074
2.3088  2.3102  2.3116  2.3129  2.3143  2.3156  2.3170
2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
2.3273  2.3286  2.3299  2.3311  2.3323  2.3336  2.3348
2.3360  2.3372  2.3384  2.3396  2.3408  2.3420  2.3431
2.3443  2.3454  2.3466  2.3477  2.3489  2.3500

* RAINFALL          TENYEAR  TYPE= 1   0.0   1.23   1.48   1.78   0.033333
*
**********************************************************************************
COMPUTE NM HYD      ID= 1    HYD= PONDIN           DA=0.01801  SQ MI
                    PER A= 28.93  B= 13.68   C= 15.79   D= 41.60
                    TP= -0.13333  HRS   RAIN= -1

K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   29.573    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 2.0100
AREA =      .007492 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


K =   .139360HR    TP =   .133330HR    K/TP RATIO =  1.045227     SHAPE CONSTANT, N =  3.377625
UNIT PEAK =   24.556    CFS   UNIT VOLUME =    .9995       B =   311.29      P60 = 2.0100
AREA =      .010518 SQ MI    IA =    .53375 INCHES    INF =   1.34450 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 5

                    HYDROGRAPH FROM AREA PONDIN

 TIME     FLOW      TIME     FLOW      TIME     FLOW      TIME     FLOW      TIME     FLOW
 HRS      CFS       HRS      CFS       HRS      CFS       HRS      CFS       HRS      CFS
 .000      .0      1.500     36.5     3.000      .4      4.500      .1      6.000      .2
 .167      .0      1.667     19.6     3.167      .3      4.667      .1      6.167      .1
 .333      .0      1.833     10.4     3.333      .2      4.833      .1      6.333      .0
 .500      .0      2.000      7.0     3.500      .2      5.000      .1      6.500      .0
 .667      .0      2.167      3.4     3.667      .2      5.167      .1      6.667      .0
 .833      .0      2.333      1.8     3.833      .2      5.333      .1      6.833      .0
1.000      .0      2.500      1.1     4.000      .1      5.500      .1
1.167      .1      2.667       .7     4.167      .1      5.667      .1
1.333     7.3      2.833       .5     4.333      .1      5.833      .2

RUNOFF VOLUME =     1.29765 INCHES     =      1.2464 ACRE-FEET
PEAK DISCHARGE RATE =      36.54 CFS  AT   1.500 HOURS   BASIN AREA =   .0180 SQ. MI.


*          18"
**********************************************************************************
*S HYD PONDOUT.18 IS FOR 18" CMP. PROJECTING ENTRANCE, 1.5% SLOPE
ROUTE RESERVOIR     ID=3  HYD=PONDOUT.18  INFLOW ID=1     CODE=5.
                    OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                     0.00000       0.0000           6
                     2.47          0.1265           7
                     7.82          0.4909           8
                     10.14         1.1836           9
                     12.08         2.2173           10

* * * * * * * * * * * * * * * * * *

 TIME      INFLOW    ELEV      VOLUME    OUTFLOW
 (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

  .00        .00      6.00       .000       .00
  .17        .00      6.00       .000       .00
```

.33	.00	6.00	.000	.00
.50	.00	6.00	.000	.00
.67	.00	6.00	.000	.00
.83	.00	6.00	.000	.00
1.00	.00	6.00	.000	.00
1.17	.07	6.00	.000	.00
1.33	7.30	6.26	.033	.64
1.50	36.54	7.48	.301	5.04
1.67	19.55	8.16	.600	8.19
1.83	10.42	8.28	.682	8.46
2.00	6.96	8.28	.682	8.46
2.17	3.40	8.22	.640	8.32
2.33	1.75	8.10	.560	8.05
2.50	1.12	7.95	.471	7.53
2.67	.75	7.72	.389	6.32
2.83	.52	7.52	.318	5.27
3.00	.38	7.36	.257	4.39
3.17	.29	7.22	.207	3.65
3.33	.23	7.10	.164	3.03
3.50	.19	7.01	.129	2.51
3.67	.17	6.80	.101	1.97
3.83	.15	6.63	.079	1.54
4.00	.14	6.49	.062	1.22
4.17	.13	6.39	.049	.96
4.33	.13	6.31	.039	.77
4.50	.13	6.25	.031	.61
4.67	.13	6.20	.026	.50
4.83	.13	6.17	.021	.41
5.00	.13	6.14	.018	.35
5.17	.13	6.12	.015	.30
5.33	.14	6.10	.013	.26
5.50	.14	6.09	.012	.23
5.67	.15	6.08	.011	.21
5.83	.15	6.08	.010	.20
6.00	.16	6.08	.010	.19
6.17	.06	6.07	.009	.17
6.33	.02	6.06	.007	.14
6.50	.01	6.04	.006	.11
6.67	.00	6.03	.004	.08
6.83	.00	6.03	.003	.07
7.00	.00	6.02	.003	.05
7.17	.00	6.02	.002	.04
7.33	.00	6.01	.001	.03
7.50	.00	6.01	.001	.02
7.67	.00	6.01	.001	.02
7.83	.00	6.01	.001	.01
8.00	.00	6.00	.001	.01
8.17	.00	6.00	.000	.01
8.33	.00	6.00	.000	.01
8.50	.00	6.00	.000	.00

PEAK DISCHARGE = 8.480 CFS - PEAK OCCURS AT HOUR 1.90
MAXIMUM WATER SURFACE ELEVATION = 8.284
MAXIMUM STORAGE = .6878 AC-FT INCREMENTAL TIME= .033333HRS

*
*S 24h
*S HYD PONDOUT.24 IS FOR 24" CMP. PROJECTING ENTRANCE, 1.5% SLOPE
*S REUSE INFLOW HYD W ID=1 = HYD PONDIN
ROUTE RESERVOIR ID=3 HYD=PONDOUT.18 INFLOW ID=1 CODE=5.

OUTFLOW CFS	STORAGE AC-FT	ELEVATION FT
0.00000	0.0000	6
2.91	0.1265	7
10.31	0.4909	8
18.30	1.1836	9
22.10	2.2173	10

* * * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	6.00	.000	.00
.17	.00	6.00	.000	.00
.33	.00	6.00	.000	.00
.50	.00	6.00	.000	.00
.67	.00	6.00	.000	.00
.83	.00	6.00	.000	.00
1.00	.00	6.00	.000	.00
1.17	.07	6.00	.000	.00
1.33	7.30	6.26	.033	.75
1.50	36.54	7.46	.294	6.31
1.67	19.55	8.10	.563	11.14
1.83	10.42	8.16	.602	11.59
2.00	6.96	8.10	.561	11.12
2.17	3.40	7.99	.487	10.24
2.33	1.75	7.73	.393	8.31
2.50	1.12	7.50	.309	6.62
2.67	.75	7.31	.241	5.23
2.83	.52	7.16	.185	4.11
3.00	.38	7.04	.141	3.21
3.17	.29	6.84	.107	2.46
3.33	.23	6.64	.081	1.86
3.50	.19	6.49	.061	1.41
3.67	.17	6.37	.047	1.08
3.83	.15	6.28	.036	.83
4.00	.14	6.22	.028	.64
4.17	.13	6.17	.022	.51
4.33	.13	6.14	.018	.40
4.50	.13	6.11	.014	.33
4.67	.13	6.09	.012	.27
4.83	.13	6.08	.010	.23
5.00	.13	6.07	.009	.21
5.17	.13	6.06	.008	.19
5.33	.14	6.06	.007	.17
5.50	.14	6.06	.007	.16
5.67	.15	6.05	.007	.16
5.83	.15	6.05	.007	.16
6.00	.16	6.05	.007	.16
6.17	.06	6.05	.006	.15
6.33	.02	6.04	.005	.12
6.50	.01	6.03	.004	.09
6.67	.00	6.02	.003	.07
6.83	.00	6.02	.002	.05
7.00	.00	6.01	.002	.04
7.17	.00	6.01	.001	.03
7.33	.00	6.01	.001	.02
7.50	.00	6.00	.001	.01
7.67	.00	6.00	.000	.01
7.83	.00	6.00	.000	.01
8.00	.00	6.00	.000	.01
8.17	.00	6.00	.000	.00

PEAK DISCHARGE = 11.606 CFS - PEAK OCCURS AT HOUR 1.80
MAXIMUM WATER SURFACE ELEVATION = 8.162
MAXIMUM STORAGE = .6032 AC-FT INCREMENTAL TIME= .033333HRS

*
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 19:14:47

12-7-97

CENTEX

EMERGENCY SPILLWAY AT DETENTION POND

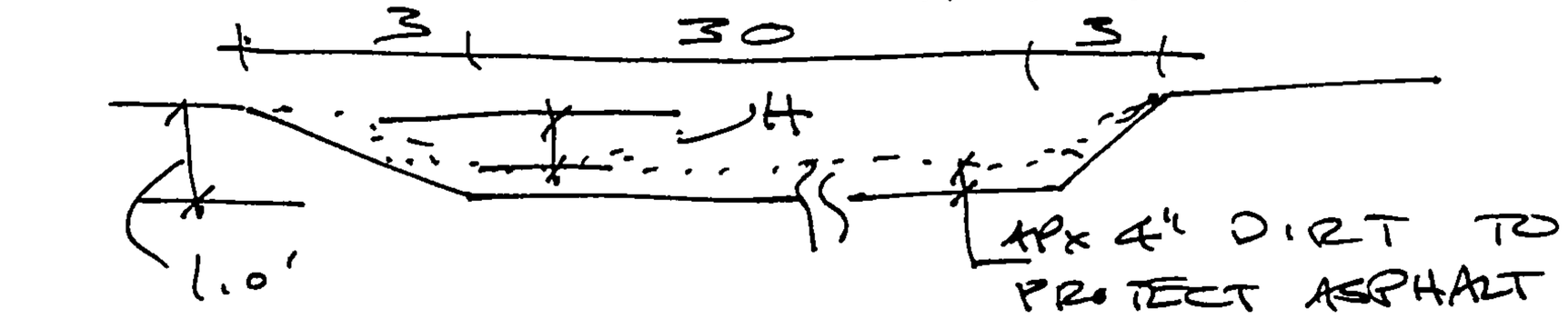
$Q_p = Q_{p100}$ INTO POND (NEGLECT OUTFLOW & STORAGE)

= 36.54 CFS ATTYMO

= 37.05 CFS DPM SMALL WATERSHED

USE 37.05

SPILLWAY SECTION ALONG BANK



$Q = C \cdot L \cdot H^{3/2}$

- ASSUME $C = 3$ APX ACCURATE
  $L = 30$ CONSERVATIVE

$37.05 = 3 \cdot 30 \cdot H^{3/2}$ OR

$H = \left(\frac{37.05}{30.3}\right)^{2/3} = 0.55'$ (~6 5/8 IN at)

H = water ~~sa~~ surface in pond back of spillway - depth over crest is less

✓ WATER SURFACE ASSUMING THE 4" DIRT DOESN'T ERODE PRIOR TO ARRIVAL OF Qpeak - CONSERVATIVE

WATER TO DIRT = 0.55 TO 0.33 = 0.22 < 1.0 AVAILABLE OF

Cherne, Curtis

From: Cherne, Curtis
Sent: Monday, June 09, 2014 10:45 AM
To: MacKenzie, John
Subject: RE: Centex's American Gypsum Wallboard Plant

John,
I trust you to just work with him on behalf of the City.
Please provide as-builts and your best guess at the flows leaving the site.
Thanks,
Curtis

From: MacKenzie, John
Sent: Friday, June 06, 2014 9:03 AM
To: Cherne, Curtis
Subject: RE: Centex's American Gypsum Wallboard Plant

Curtis,

The owner has agreed to provide as-built surveying. He is also cooperating with us on his other on-site ponds that are connected to his MSGP (which he has verbally agreed to install spillways on – if you can believe that). We think that ultimately there will be significant downstream reductions in peak discharge once all these ponds (there are about 3 or 4) are measured and routed. We are negotiating with him now so that in the end we know to what extent the new El Pueblo storm drain needs to be sized for.

Can you trust us to just work with him on behalf of the City and just send the final outcome documentation to your office? If we can avoid having another City department go out there and perform an inspection (and potentially make him more nervous) I recommend you not go out to the site at this time.

John MacKenzie, PE
City of Albuquerque
Department of Municipal Development
Engineering Division
(505) 768-3965

From: Cherne, Curtis
Sent: Tuesday, April 22, 2014 10:46 AM
To: MacKenzie, John
Subject: RE: Centex's American Gypsum Wallboard Plant

John,
Would it be possible to get some as-builts (just survey data would be acceptable)?
If the property owner would like Hydrology to do an inspection, we can accommodate them, else, the as-builts will suffice.

Curtis

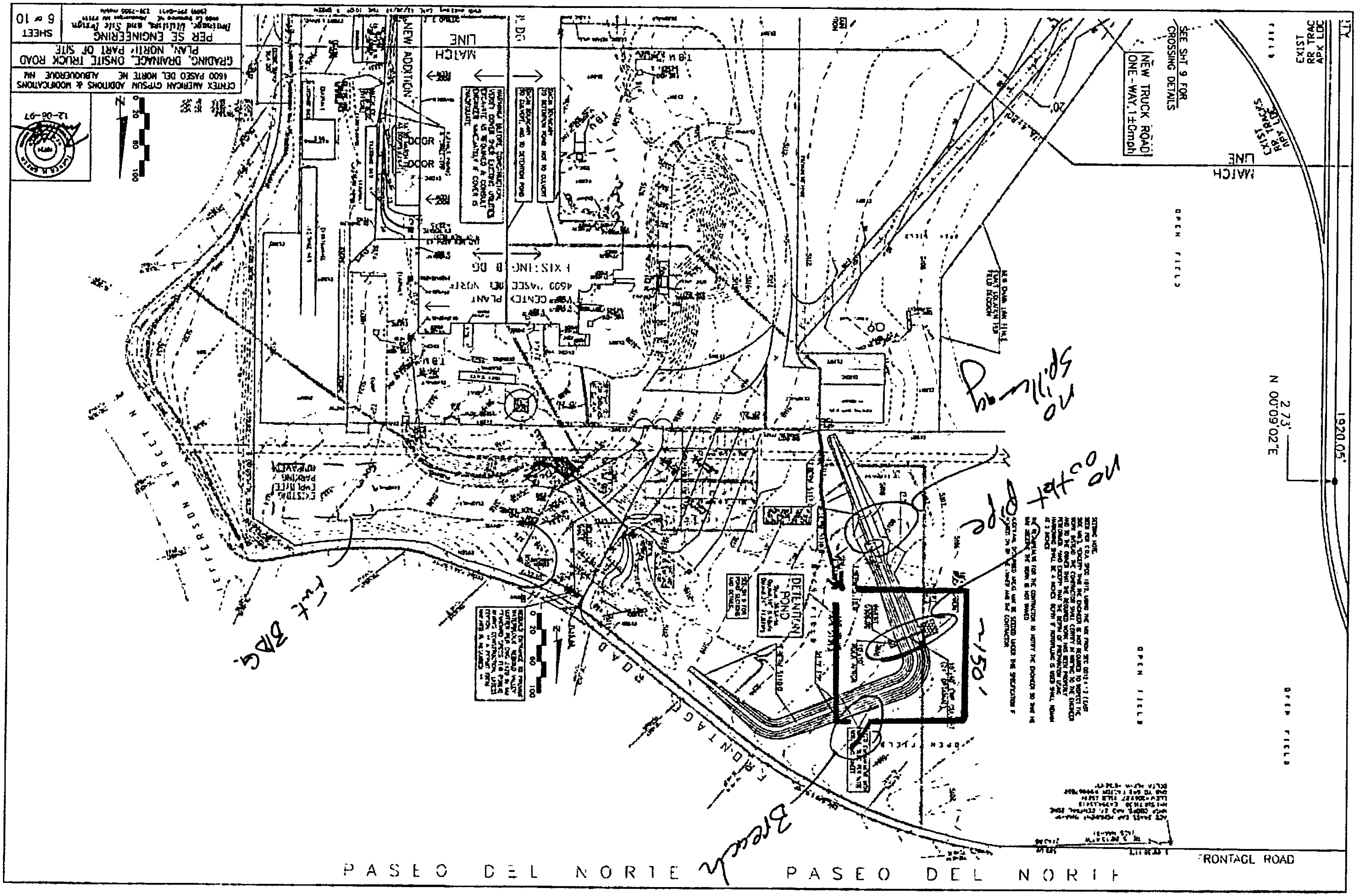
From: MacKenzie, John
Sent: Thursday, April 17, 2014 8:26 AM
To: Cherne, Curtis
Subject: Centex's American Gypsum Wallboard Plant

Curtis,

I think the owner will be having the Paseo/I-25 contractor perform work on this site uncertified pond to get it in compliance with the approved plan.

Given that it's been approximately 16 years since the pond appears to have been wrongly constructed, do you still want a formal engineer's certification, or can your office perform a quick inspection to determine if did an adequate job? I'm not sure that the contractor or the owner would have an engineer available to certify a pond like this, although I suppose he could go out and hiring one for this particular task (that would be weird).

John MacKenzie, PE
City of Albuquerque
Department of Municipal Development
Engineering Division
(505) 768-3965



1920.05'
2.73'
N 00°09'02"E
EXIST RR TRAC APX LOC
EXIST RR TRACKS APX LOC
MATCH LINE
SEE SHT 9 FOR CROSSING DETAILS
NEW TRUCK ROAD ONE-WAY, 1±0mph
OPEN FIELD
FRONTAGE ROAD
PASEO DEL NORTE
PASEO DEL NORTE
FRONTAGE ROAD
DETENTION POND
EXISTING BLDG
4600 PASEO DEL NORTE
CENTEX PLANT
NEW ADDITION
DOOR
DOOR
EXISTING EMPLOYEE PARKING
N JEFFERSON STREET
~150'
no outlet pipe
no spillway
Breach
Fut. BDG.
CENTEX AMERICAN GYPSUM ADDITIONS & MODIFICATIONS
4600 PASEO DEL NORTE NE ALBUQUERQUE NM
GRADING, DRAINAGE, ONSITE TRUCK ROAD PLAN, NORTH PART OF SITE
PER SE ENGINEERING
SHEET 6 of 10
12-08-97

Cherne, Curtis

From: MacKenzie, John
Sent: Wednesday, May 14, 2014 8:25 AM
To: Cherne, Curtis
Subject: RE: Centex's American Gypsum Wallboard Plant

We're getting as-builts, but we know it's out of compliance so we'll be pushing for subsequent remedial action.

John MacKenzie, PE
City of Albuquerque
Department of Municipal Development
Engineering Division
(505) 768-3965

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Subject: RE: Centex's American Gypsum Wallboard Plant

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