



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 2, 2001

Ronald R. Bohannon, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

RE: ONE PRESIDENTIAL PLAZA LOT C-1 (E-17/D55A)
(Osuna & 1-25)
ENGINEERS CERTIFICATION FOR CERTIFICATE OF OCCUPANCY
ENGINEERS STAMP DATED 2/3/2000.
ENGINEERS CERTIFICATION DATED 8/2/2001

Dear Mr. Bohannon:

Based upon the information provided in your Engineers Certification submittal dated 8/2/2001, the above referenced site is approved for Permanent Certificate of Occupancy.

If I can be of further assistance, please contact me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Public Works Department
bab

C: Vickie Chavez, COA
approval file
drainage file



City of Albuquerque

PUBLIC WORKS DEPARTMENT

February 25, 2000

INTEROFFICE CORRESPONDENCE

HYDROLOGY DIVISION

TO: Desiderio Salas, Street Maintenance Division

FROM: Bradley L. Bingham PE, Hydrology Div., PWD *BUB*

SUBJECT: **PRIVATE DRAINAGE FACILITIES WITHIN PUBLIC RIGHT-OF-WAY
DRAINAGE FILE NUMBER (E17/D55A).**

Transmitted herewith is a copy of the approved drainage plan for the referenced project incorporating the SO #19 design.

This plan is being submitted to you for permitting and inspection. Please provide this section with a signed-off copy per the signature block upon construction and acceptance by your office.

As you are aware, the signed off SO#19 is required by this office for Certificate of Occupancy release; therefore your expeditious processing of this plan would be greatly appreciated and would avoid any unnecessary delay in the release of Certificate of Occupancy.

Thank you for your cooperation and if you should have any questions and/or comments, please feel free to call me at 924-3986.

Attachment



City of Albuquerque

February 25, 2000

Ron Bohannon, PE
Tierra West LLC
4421 McLeod NE Suite D
Albuquerque, NM 87109

Re: Lot C-1, One Presidential Plaza Drainage Report
Engineer's Stamp dated 2-3-00 (E17/D55A)

Dear Mr. Bohannon,

Based upon the information provided in your submittal dated 2-9-00, the above referenced site is approved for Site Development Plan for Building Permit, Building Permit, Grading Permit and SO#19 Permit.

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

A separate permit is required for construction within City R/W. A copy of this approval letter must be on hand when applying for the excavation permit.

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

If you have any questions about my comments, you can contact me at 924-3986

Sincerely,

Bradley L. Bingham, PE
Hydrology Review Engineer

C: Pam Lujan
file

DRAINAGE REPORT

for

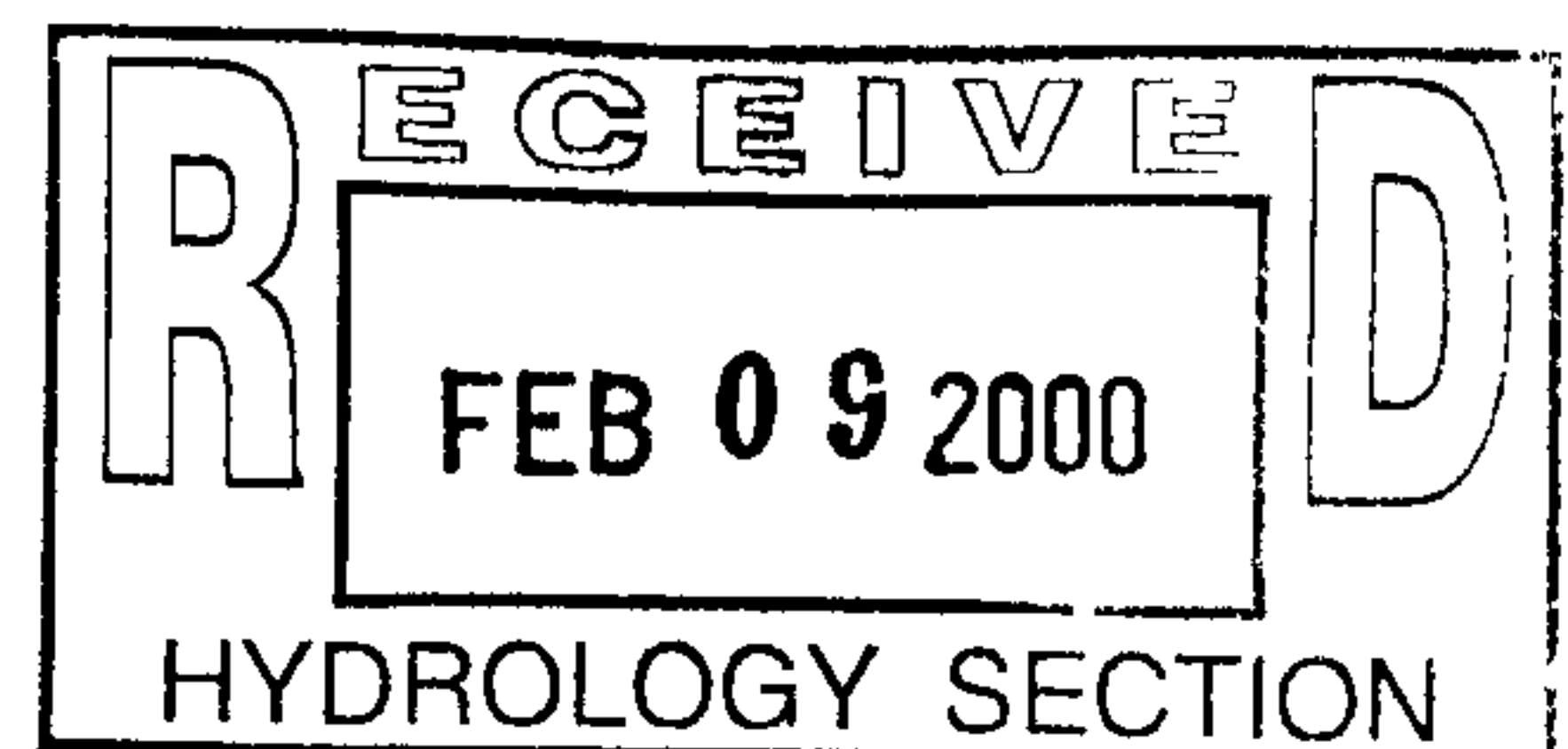
Lot C-1 One Presidential Plaza

Prepared by

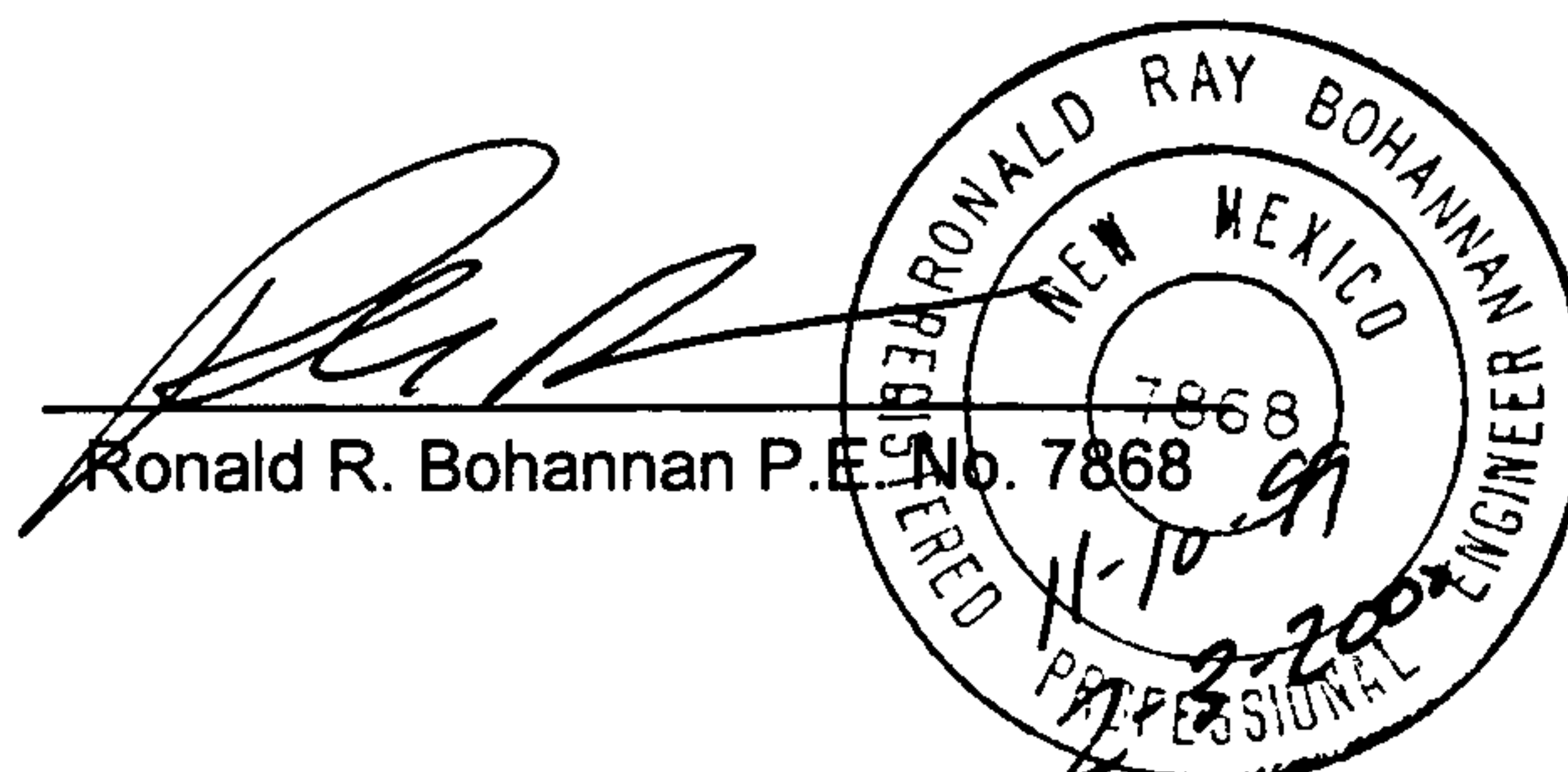
Tierra West, LLC
4421 McLeod Road NE, Suite D
Albuquerque, New Mexico 87109

Prepared for

Jeff Hagen
Platinum Properties Group, Inc.
1589 Hwy 7, Suite 203
Minnetonka, MN 55305



October 1999



Location

The site is identified as Lot C-1 of One Presidential Plaza. It is located on the northwest corner of Osuna Road and Interstate 25. Retail uses are proposed for the site which is zoned IP. The site is shown on Zone Atlas Map E-17 and contains approximately 2.28 acres. The purpose of this report is to provide the drainage analysis and management plan for a proposed retail development.

Existing Drainage Conditions

The site is currently undeveloped. The natural slope of the site is from east to west away from Osuna Road and I-25. There is one on-site basin with an undeveloped flow rate of 5.40 cfs. There is one offsite basin that impacts the site. It is located east of the site in the I-25 right-of-way with a total undeveloped flow rate of 0.75 cfs. There are no other offsite flows entering the site. Osuna and Presidential Drive prevent any flows from entering the site from the north or west. The natural topography of the site prevents any flows from entering the site from the south.

FIRM Map and Soil Conditions

The site is located on FIRM map 35001C0139 D as shown on the attached excerpt. The map shows that the site does not lie within any 100 year flood plains.

The site contains one soil from the Soil Conservation Service Soil Survey of Bernalillo County. The Embudo gravelly fine sandy loam has medium runoff and the hazard of water erosion is moderate.

On-Site Drainage Management Plan

There is a master plan for the One Presidential Plaza site titled "Master Development

Plan- One Presidential Plaza” by Bohannon-Huston (E17/D55). According to this plan Lot C-1 is part of Basin C. Basin C is allowed to discharge directly to Osuna Road or to the existing internal streets which will convey the flow to Osuna Road. There are severe restrictions placed on the site by the report.

10 Year Storm

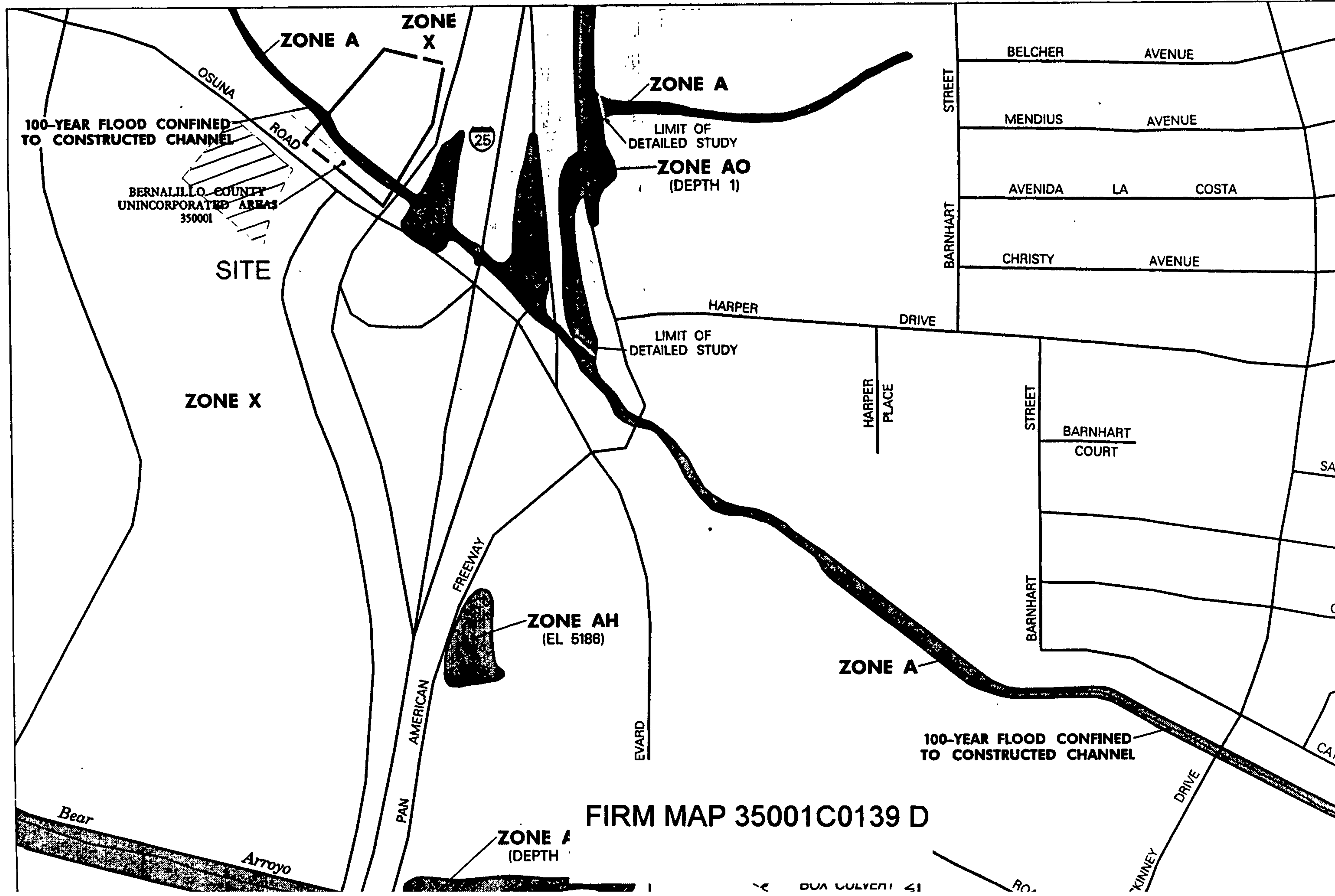
During the 10 year storm, Osuna must meet the “one lane dry” requirement. According to the master plan, Osuna does not meet this requirement. In order to not make the situation any worse, the discharge during the 10 year storm has been limited to the existing undeveloped flow rate for the site. Consequently, Basin C is allowed a discharge of 0.24 cfs during the 10 year storm. The offsite basin (Basin 4) is allowed to pass through the site. This is a total allowable discharge during a 10 year storm of 0.64 cfs.

There are three basins on-site (Basins 1-3) and one offsite basin (Basin 4) for the site. There is a large proposed pond (Pond 1) in Basin 1. Basins 1, 2, and 4 will drain to Pond 1. Basin 2 consists of the southern building’s roof drainage. The drainage is captured by a new trench drain in the rear of the building. The trench drain conveys the flow west where a 12" pipe will be connected to the drain. The pipe will carry the flow from Basin 2 to Pond 1 where the outflow will be severely limited. Basin 4 will sheet flow to Basin 1 where it will be ponded in Pond 1. Pond 1 will have an outflow of 0.22 cfs and will contain a total volume of 0.3445 ac-ft. A 2.25" orifice plate will control the flow to the 0.22 cfs allowable from Pond 1. A 6" ductile iron pipe will convey the flow from Pond 1 to a sidewalk culvert and discharge the flow to Presidential Drive.

Basin 3, with a developed flow of 0.91 cfs, will sheet flow to Pond 2. A 6" pipe in the curb will convey the flow to Presidential Drive. The outflow from Pond 2 will be limited to 0.42 cfs.

106°35'37"
35°09'22"

JOINS PANEL 0137



FIRM MAP 35001C0139 D

The total allowable discharge from the site is 0.64 cfs. The site will discharge 0.64 cfs which does not exceed the allowable flow.

100 Year Storm

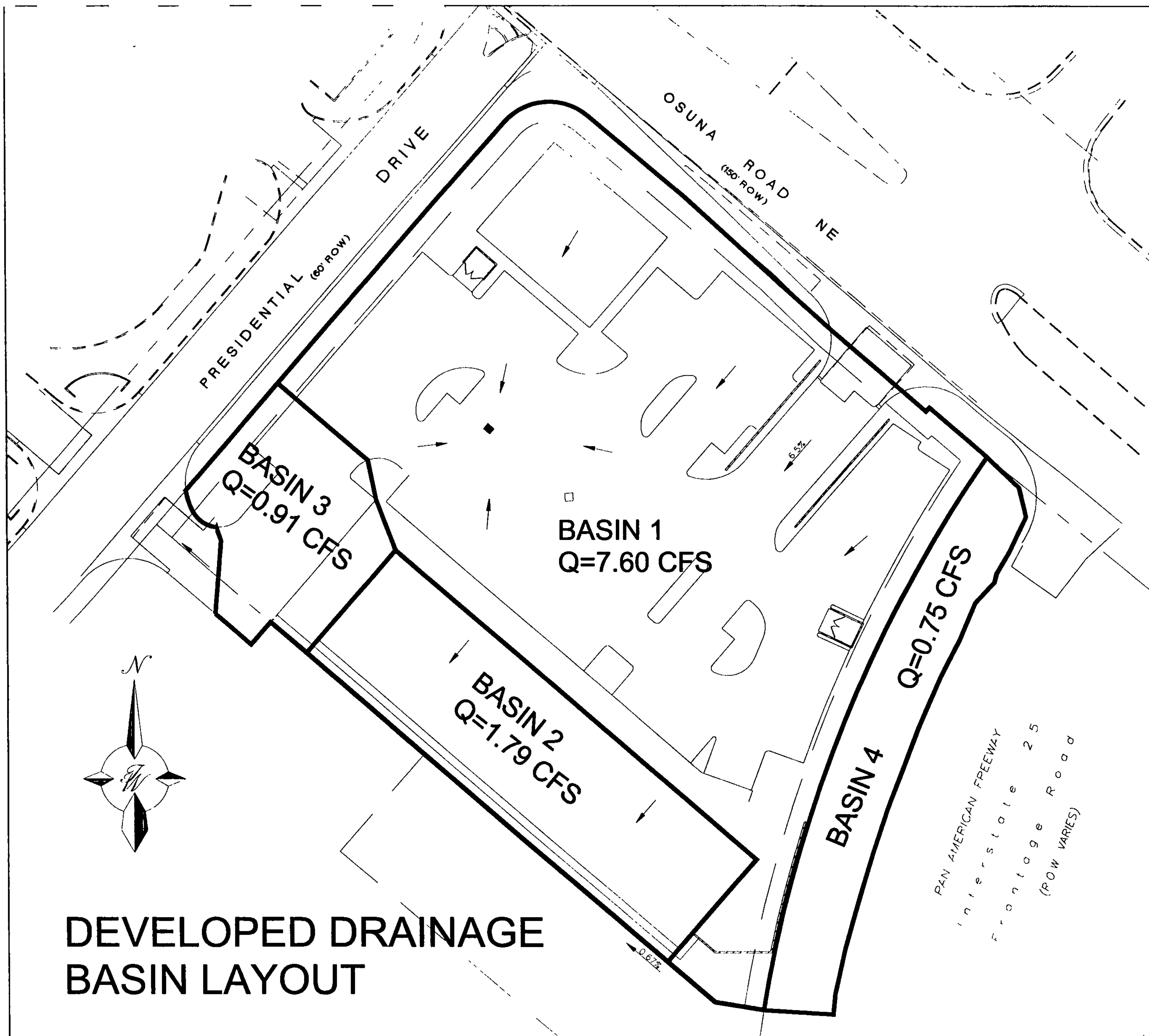
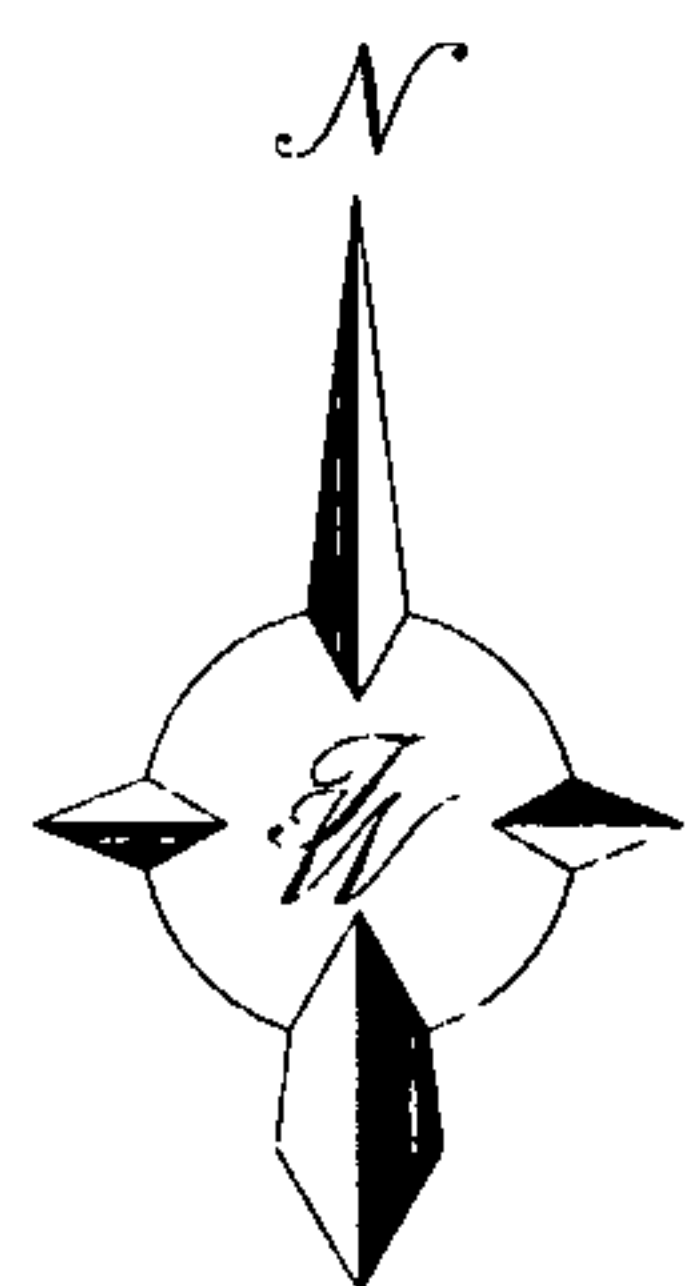
During a 100 year storm the site has an allowable discharge of 4.06 cfs/acre. Basin 4, with a flow of 0.75 cfs, is allowed to pass through the site. Therefore, the total allowable discharge from the site will be 10.01 cfs. Pond 1 will have a overflow spillway for the 100-year storm in the curb on the west side of the site. A landscaped channel will convey the developed flow of 8.46 cfs from Basins 1, 2, and 4 through a series of sidewalk culverts and into Presidential Drive. Pond 2 will overflow out the entrance on the west side of the site. The total developed 100 year flow from the site is 10.01 cfs which is equal to the allowable of 10.01 cfs.

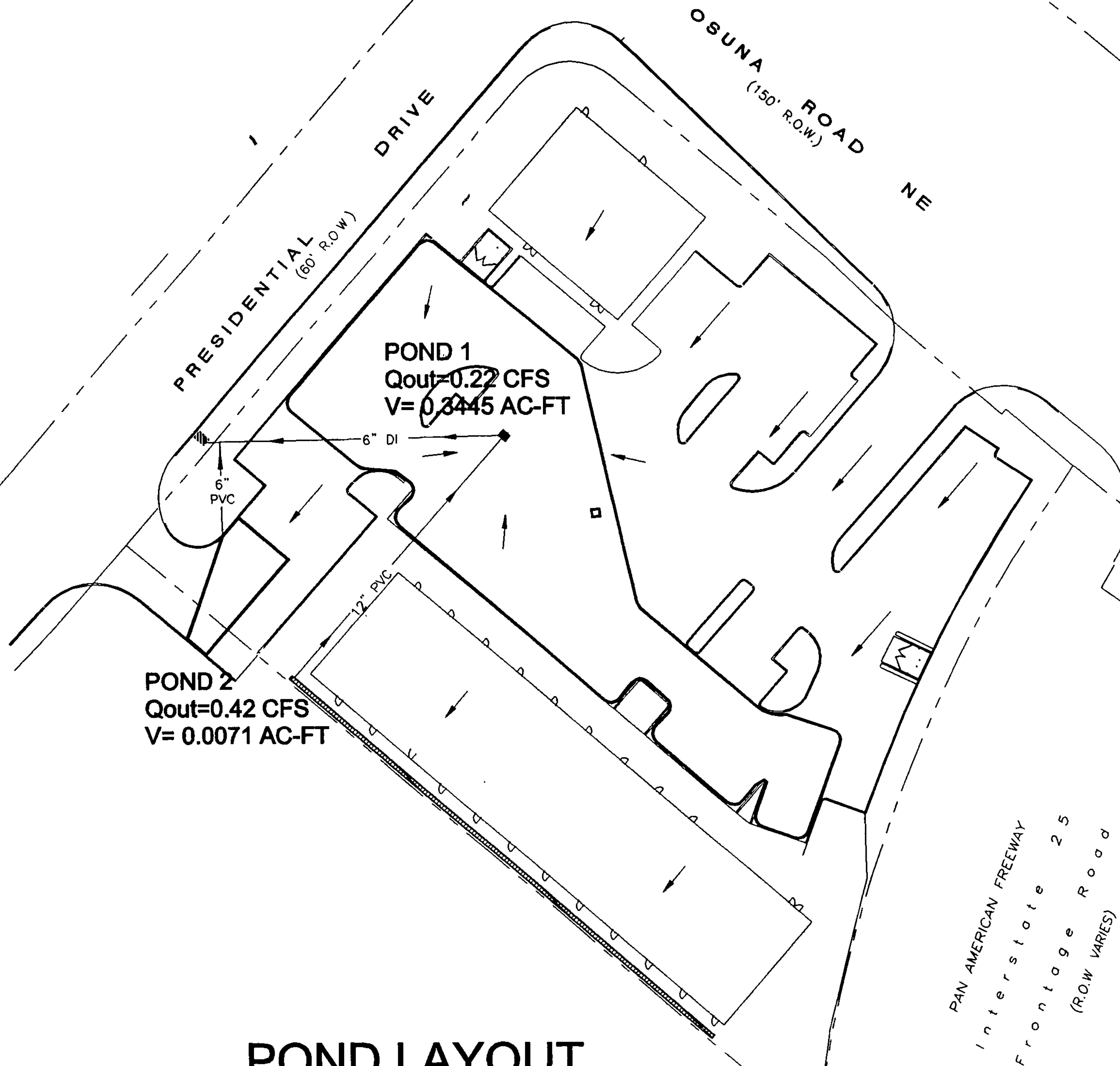
Calculations

The following is an explanation of the storm sewer and pond calculations. The pond capacity was established using AHYMO. The stage-storage-discharge charts for the ponds was developed using a spreadsheet and can be found in the "Ponding Calculations" section of the report. The discharge rate from the pond is calculated using the orifice equation. The small orifice size required for Pond 1 will be obtained by using an orifice plate on a 6" pipe. This will limit the discharge from the pond to the allowable rate.

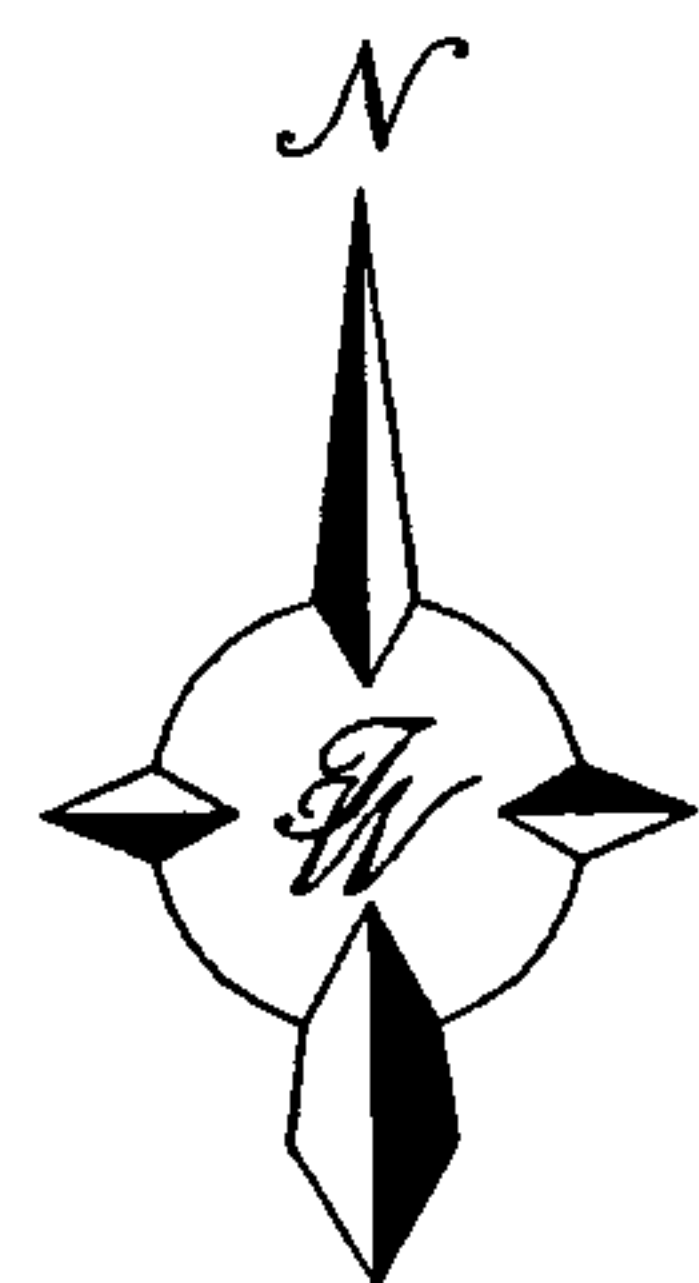
A careful examination of the water surface elevation in Pond 1 and the invert of the trench drain reveals an outlet control situation. The water surface elevation of Pond 1 is 5154.8. The invert of the trench drain is 53.42. Therefore, the water in the pond may back up into the trench drain. The grate of the trench drain is 5155.38 and higher than the water surface elevation within the pond. The pond may back up into the drain but it will not raise higher than the grate of the trench drain. Because of the difficult grades within the site and the

DEVELOPED DRAINAGE BASIN LAYOUT

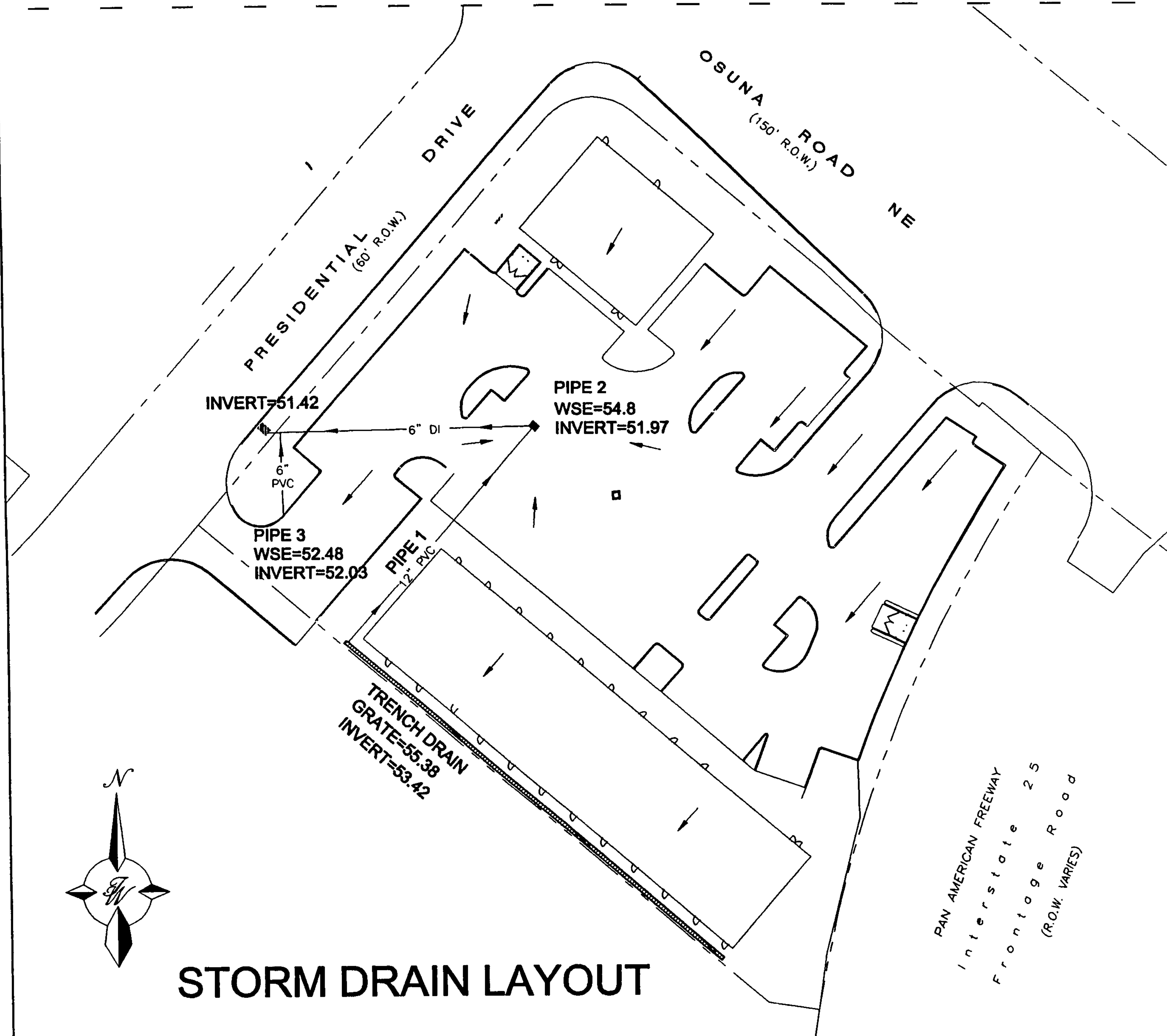




POND LAYOUT



STORM DRAIN LAYOUT



INVERT=51.42

PIPE 3
WSE=52.48
INVERT=52.03

PIPE 2
WSE=54.8
INVERT=51.97

TRENCH DRAIN
GRATE=55.38
INVERT=53.42

PRESIDENTIAL
(60' R.O.W.)

OSUNA ROAD
(150' R.O.W.)

PAN AMERICAN FREEWAY
Interstate 25
Frontage Road
(R.O.W. VARIES)

limited allowable discharge, we feel this situation is acceptable.

Summary

There are two proposed ponds on the site. These ponds will limit the 10 year storm to the allowable discharge of 0.64 cfs. During the 100 year storm, the ponds will overflow to Presidential Drive. The total discharge from the site will be 10.01 cfs which is equal to the allowable discharge of 10.01 cfs. The sidewalk culverts will require an SO #19 permit to install. There is no other infrastructure required.

Runoff Calculations

Zone 2			
Storm	Depth (inches)		
	P-60	P-360	P-1440
10 Year	1.34	1.57	1.83
100 Year	2.01	2.35	2.75

Land Treatment					
Basin		A	B	C	D
1	Existing	0	100	0	0
	Proposed	0	10	0	90
2	Existing	0	100	0	0
	Proposed	0	0	0	100
3	Existing	0	100	0	0
	Proposed	0	10	0	90
4	Existing	0	0	100	0
	Proposed	0	0	100	0

Drainage Basins

Existing and Developed Basins

BASIN	AREA (SF)	AREA (AC)	AREA (MI ²)
1	74059.23	1.7002	0.002657
2	16533.98	0.3796	0.000593
3	8704.53	0.1998	0.000312
4	10266.31	0.2357	0.000368

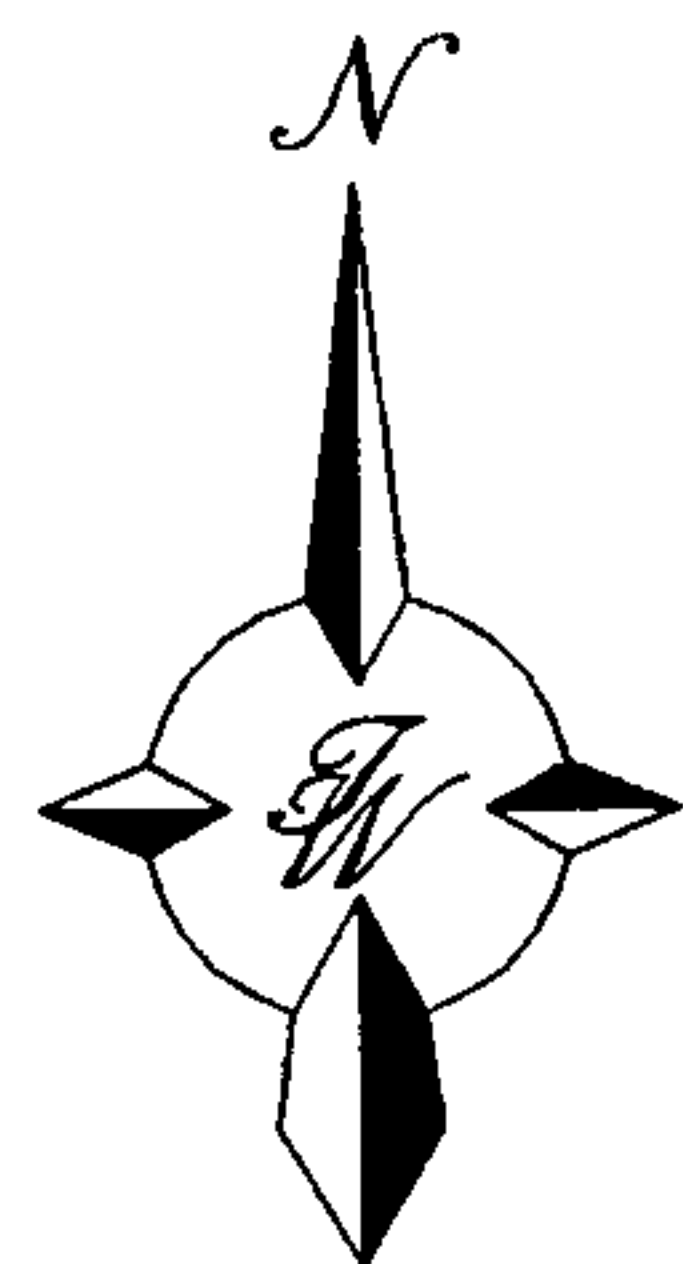
Runoff Calculation Results

Existing

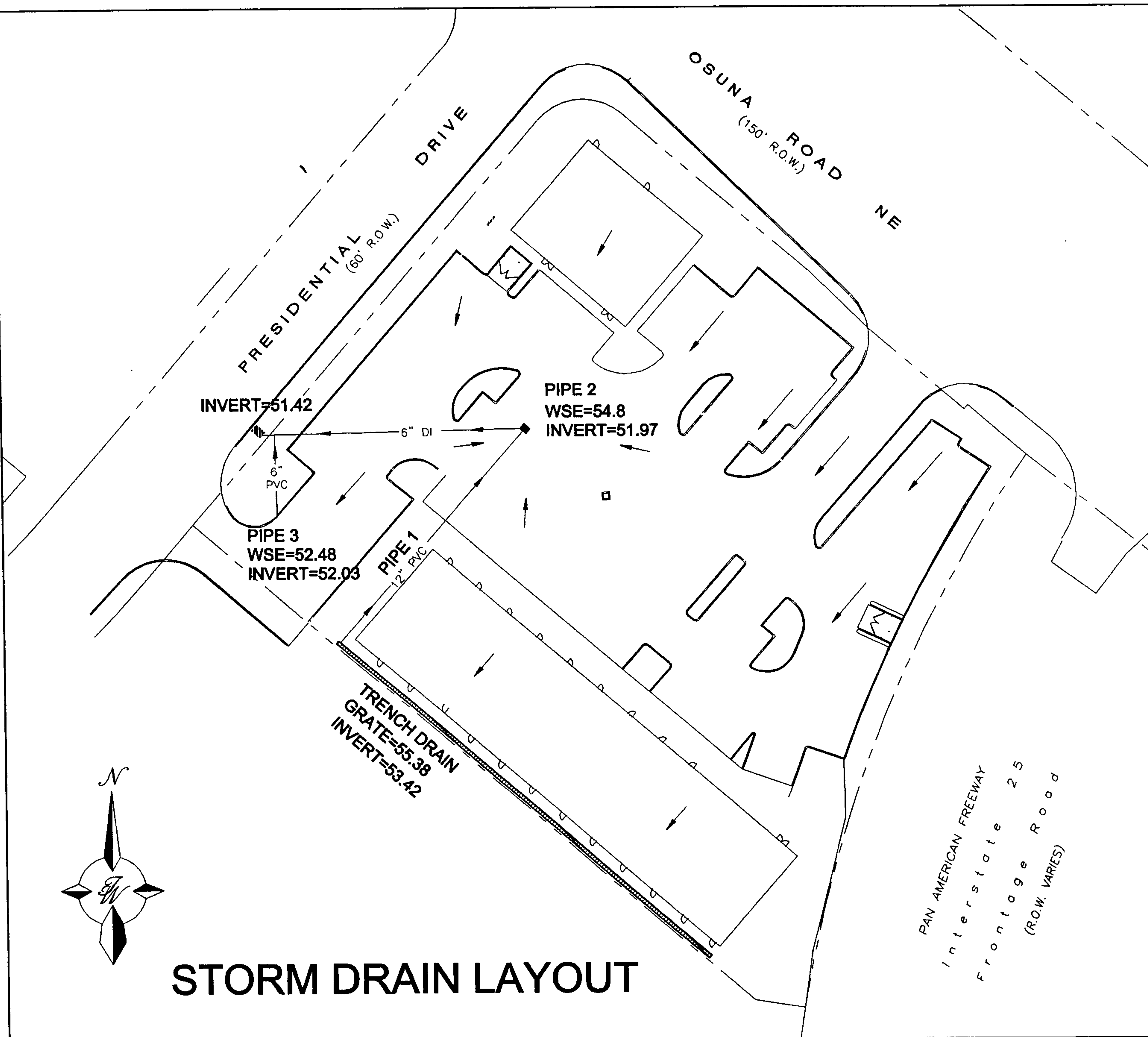
BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	3.89	1.59	0.110	0.039
2	0.87	0.36	0.025	0.009
3	0.64	0.19	0.019	0.005
4	0.75	0.40	0.022	0.010

Developed

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	7.60	4.92	0.281	0.175
2	1.79	1.19	0.067	0.042
3	0.91	0.58	0.033	0.020
4	0.75	0.40	0.022	0.010



STORM DRAIN LAYOUT



Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	12	1.03	0.79	0.25	4.71	1.79	2.28
2	6	0.33	0.20	0.125	0.42	0.22	1.12
3	6	1.39	0.20	0.125	0.86	0.40	2.04

Manning's Equation:
 $Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$

- A = Area
- R = D/4
- S = Slope
- n = 0.01

Trench Drain Capacity

Southwest side of site behind building

n= 0.017

Section	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Beginning (A-A)	1	1	0.33	0.33	1.66	0.198795	0.6	0.76	0.00	0.00
Middle (B-B)	1	1	1.05	1.05	3.10	0.33871	0.6	3.46	0.90	0.86
End (C-C)	1	1	1.77	1.77	4.54	0.389868	0.6	6.41	1.79	1.01

100-YEAR OUTLET CHANNEL

Northwest side of property near Presidential Drive

n= 0.05

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
	8	8	0.5	4.00	9.00	0.444444	4	13.88	8.46	2.12

Manning's Equation:

$$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$$

A = Area

R = D/4

S = Slope

SIDEWALK CULVERT - 100 year Storm for Basins 1, 2, and 4

Orifice Equation:

$$Q = CA\sqrt{2gH}$$

Solve for Q

$$C = 0.6$$

$$A = 0.5833 * 2 = 1.167 \text{ ft}^2$$

$$g = 32.2$$

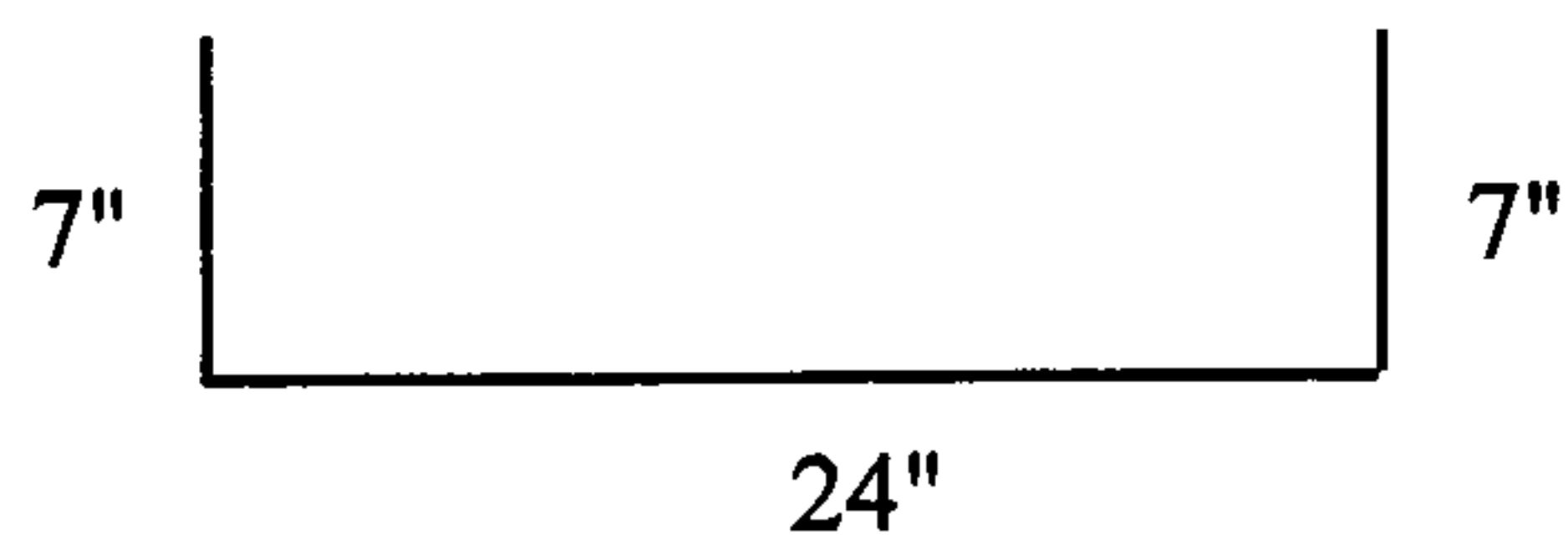
H = Height of water measured from center of orifice

$$Q = 0.6(1.167) \sqrt{2 * 32.2 * \frac{0.5833}{2}}$$

$$Q = 3.035 \text{ cfs}$$

Use 3-24" sidewalk culverts

$$9.10 \text{ cfs} > 8.46 \text{ cfs}$$



VOLUME CALCULATIONS

POND 2

Ab - Bottom Of The Pond Surface Area

At - Top Of The Pond Surface Area

D - Water Depth

Dt - Total Pond Depth

C - Change In Surface Area / Water Depth

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 0.00$$

$$\text{At} = 1,233.28$$

$$\text{Dt} = 0.50$$

$$\text{C} = 2466.56$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
52.03	0	0	0.000
52.33	0.3	0.0025	0.211
52.43	0.4	0.0045	0.366
52.53	0.5	0.0071	0.473

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 6$$

$$\text{Area (ft}^2\text{)} = 0.19635$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 1

Ab - Bottom Of The Pond Surface Area

At - Top Of The Pond Surface Area

D - Water Depth

Dt - Total Pond Depth

C - Change In Surface Area / Water Depth

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 19,986.88$$

$$\text{Dt} = 1.50$$

$$\text{C} = 13320.05$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
51.94	0	0	0.000
53.50	1.56	0.0002	0.161
53.70	1.76	0.0064	0.172
53.90	1.96	0.0248	0.182
54.10	2.16	0.0554	0.191
54.30	2.36	0.0982	0.200
54.50	2.56	0.1533	0.209
54.70	2.76	0.2206	0.217
54.90	2.96	0.3001	0.225
55.00	3.06	0.3445	0.229

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 2.25$$

$$\text{Area (ft}^2\text{)} = 0.027612$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

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RUN DATE (MON/DAY/YR) =11/02/1999
      USER NO.= R BOHANN.I01

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