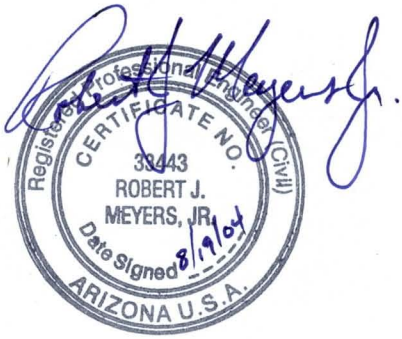
2004P104

Drainage Report
For Project #ST85100174

35th Avenue
Deer Valley Road to Pinnacle Peak Road

Phoenix, Arizona
August, 2004



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Part I
Narrative

The paving project, 35th Avenue from Deer Valley Road to Pinnacle Peak Road, will include the construction of new catch basins and connector pipes to convey storm water to the 35th Avenue storm drains to be built under this project. Storm Drain #1 will connect into an existing storm drain to the south, at the intersection of 35th Avenue and Deer Valley Road. Storm Drains #2 and #3 will discharge into the desert area north of Adobe Dam and west of 35th Avenue. Storm Drain #4 will discharge into an existing wash near Parkside Lane, west of 35th Avenue.

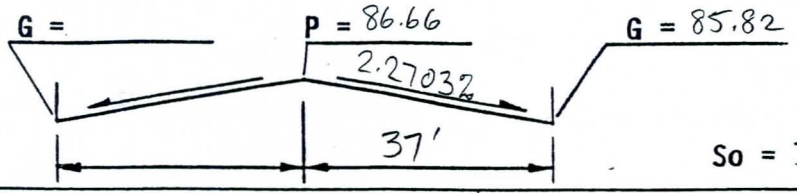
The general direction of overland flow in this area is towards the southwest. However, the runoff from the residential area to the east cannot flow onto 35th Avenue because the intersections of Williams Drive and Parkside Lane have highpoints, which act like berms.
The offsite runoff north of Parkside Lane drains into a grate that runs across Parkside Lane and discharges into a wash, which crosses 35th Avenue by way of 5-36" pipe culverts.
The runoff south of Parkside Lane travels south towards Adobe Dam in a drainage ditch along the east side of 35th Avenue. At Adobe Dam, it then crosses 35th Avenue through a 72" x 60" elliptical corrugated metal pipe culvert which discharges into the undeveloped area on the west side.
Since the offsite runoff is diverted elsewhere, only the runoff within the 35th Avenue right-of-way needs to be considered for the storm drain. The drainage area will extend to the project limits, from Deer Valley Road to Pinnacle Peak Road.
A runoff coefficient of 0.95 was used to calculate the onsite runoff.

The hydrology applied on the inlet design sheets has been derived from "Storm Water Policies and Standards" (City of Phoenix-March 2004) using the rational equation Q=CIA and a two year storm frequency.
The hydraulics are in accordance with City of Phoenix Storm Drain policies.

Part II
Inlet Design Sheets

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 1

Station 72+00, Rt
On 35th Ave
Looking North



So = 3.9900 %

Total Area	0.96	Ac.
Zoning Factor	0.95	
Ai	0.91	Ac.
For Concentration Time Street S	3.9900	%
Max. Dist.	650	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	2.18	cfs
Flow by	—	cfs
Total Qa	2.18	cfs
Y	0.15	ft.
T	6.72	ft.
V	4.26	fps
Inlet Type	M-1, L=10'	
Qin	1.36	cfs
Q Flow by	0.82	cfs
To Inlet No.	3	
Available Head		ft.
Length Connector Pipe	6	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 4.26 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet #

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 6.71' ≤ 25' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.102 La = 21.304 L = (10 + 3') / 1.2

L/La = 0.509 a/Y = 0.17'/Y = 1.115

Qin/Qa = 0.623 Qin = 1.36

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

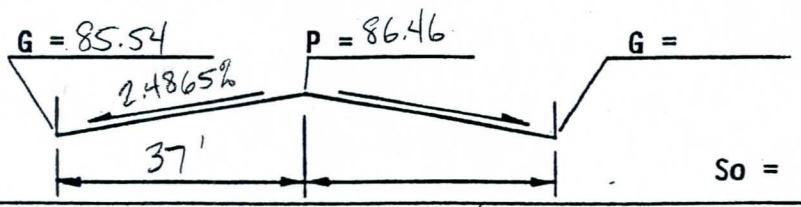
S =

V =

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 2

Station 71+95, Lt
On 35th Ave
Looking North



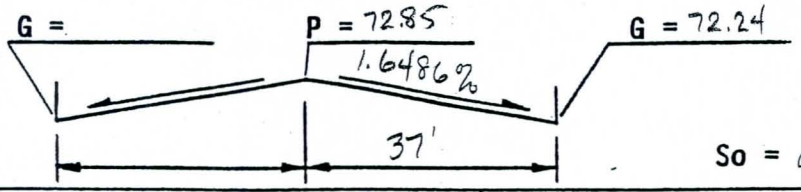
So = 3.9900 %

	Total Area	0.97 Ac.
	Zoning Factor	0.95
	Ai	0.92 Ac.
	For Concentration Time Street S	3.9900 %
	Max. Dist.	650 Ft.
V = 4.37 fps Tc = Max. Dist./(60 x V)	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	2.21 cfs
From Inlet #	Flow by	— cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	2.21 cfs
n = 0.015	Y	0.16 ft.
T = Y/Sx 6.38 ≤ 25 ' Allowable	T	6.38 ft.
$V = 2QaSx/Y^2$	V	4.37 fps
See Chart Page 28:	Inlet Type	M-1, L=10'
Qa/La = 0.106 La = 20.758 L = (10 + 3') / 1.2	Qin	1.41 cfs
L/La = 0.522 a/Y = 0.17'/Y = 1.072	Q Flow by	0.80 cfs
Qin/Qa = 0.639 Qin = 1.41	To Inlet No.	4
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	67 ft.
Q =	Diameter Connector Pipe	15 in.
S =		
V =	Depth of Catch Basin	3.5 ft.

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 3

Station 66+90, Rt
On 35th Ave
Looking North



So = 0.3763 %

Total Area	0.76	Ac.
Zoning Factor	0.95	
Ai	0.72	Ac.
For Concentration Time Street S	0.4050	%
Max. Dist.	510	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.72	cfs
Flow by	0.82	cfs
Total Qa	2.55	cfs
Y	0.22	ft.
T	13.55	ft.
V	1.69	fps
Inlet Type	M-1, L=10'	
Qin	1.97	cfs
Q Flow by	0.58	cfs
To Inlet No.	Existing	
Available Head		ft.
Length Connector Pipe	7	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 1.69 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet # 1

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 13.55' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.151 La = 16.836 L = (10 + 3') / 1.2

L/La = 0.643 a/Y = 0.17'/Y = 0.761

Qin/Qa = 0.774 Qin = 1.97

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

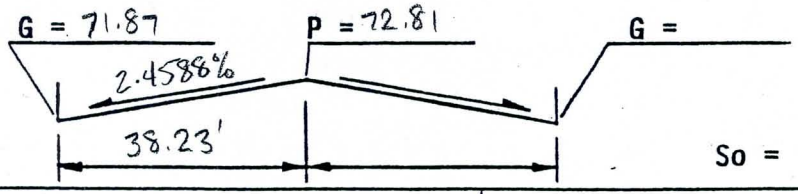
S =

V =

Design by: R. M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 4

Station 66+80, Lt
On 35th Ave
Looking North



So = 0.3763 %

	Total Area	0.77 Ac.
	Zoning Factor	0.95
	Ai	0.73 Ac.
	For Concentration Time Street S	0.5121 %
	Max. Dist.	515 Ft.
V = 1.86 fps Tc = Max. Dist./(60 x V)	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	1.75 cfs
From Inlet # 2	Flow by	0.80 cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	2.55 cfs
n = 0.015	Y	0.26 ft.
T = Y/Sx 10.55' ≤ 25 ' Allowable	T	10.55 ft.
$V = 2QaSx/Y^2$	V	1.86 fps
See Chart Page 28:	Inlet Type	M-1, L=10'
Qa/La = 0.178 La = 14.361 L = (10 + 3') / 1.2	Qin	2.21 cfs
L/La = 0.754 a/Y = 0.17'/Y = 0.655	Q Flow by	0.34 cfs
Qin/Qa = 0.867 Qin = 2.21	To Inlet No.	Existing
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	68 ft.
Q =	Diameter Connector Pipe	15 in.
S =		
V =	Depth of Catch Basin	4 ft.

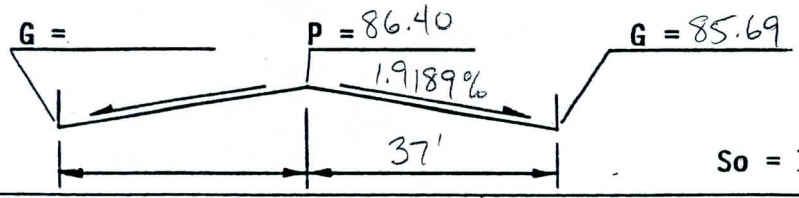
Design by: R.M. Date: 5/04 Checked by: J.P.

Storm Drain #2

Station 85+00 to Station 88+70

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 5

Station 85+00, Rt
On 35th Ave
Looking North



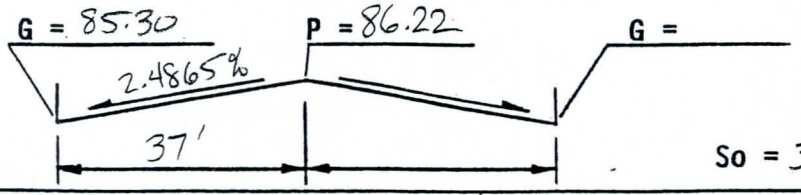
So = 3.9182 %

	Total Area	0.98 Ac.
	Zoning Factor	0.95
	Ai	0.93 Ac.
	For Concentration Time Street S	3.9182 %
	Max. Dist.	660 Ft.
V = 4.08 fps Tc = Max. Dist./(60 x V)	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	2.23 cfs
From Inlet #	Flow by	— cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	2.23 cfs
n = 0.015	Y	0.15 ft.
T = Y/Sx 7.55' ≤ 25 ' Allowable	T	7.55 ft.
$V = 2QaSx/Y^2$	V	4.08 fps
See Chart Page 28:	Inlet Type	M-1, L=10'
Qa/La = 0.097 La = 22.943 L = (10 + 3') / 1.2	Qin	1.30 cfs
L/La = 0.472 a/Y = 0.17'/Y = 1.173	Q Flow by	0.93 cfs
Qin/Qa = 0.583 Qin = 1.30	To Inlet No.	10
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	61 ft.
Q =	Diameter Connector Pipe	15 in.
S =	Depth of Catch Basin	4 ft.
V =		

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 6

Station 85+05, Lt
On 35th Ave
Looking North



So = 3.9182 %

	Total Area	0.99 Ac.
	Zoning Factor	0.95
	Ai	0.94 Ac.
	For Concentration Time Street S	3.9182 %
	Max. Dist.	660 Ft.
V = 4.36 fps Tc = Max. Dist./(60 x V)	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	2.26 cfs
From Inlet #	Flow by	— cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	2.26 cfs
n = 0.015	Y	0.16 ft.
T = Y/Sx 6.45' ≤ 25 ' Allowable	T	6.45 ft.
$V = 2QaSx/Y^2$	V	4.36 fps
See Chart Page 28:	Inlet Type	M-1, L=10'
Qa/La = 0.108 La = 20.976 L = (10 + 3') / 1.2	Qin	1.43 cfs
L/La = 0.516 a/Y = 0.17'/Y = 1.059	Q Flow by	0.83 cfs
Qin/Qa = 0.635 Qin = 1.43	To Inlet No.	9
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	13 ft.
Q =	Diameter Connector Pipe	15 in.
S =		
V =	Depth of Catch Basin	4 ft.

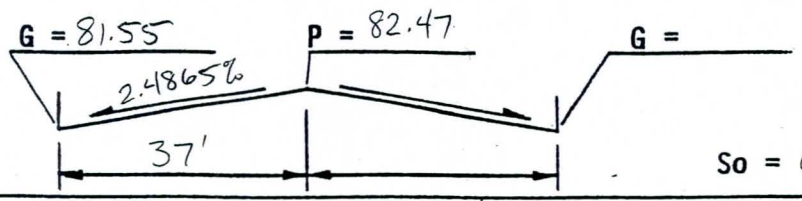
Design by: R.M. Date: 5/04 Checked by: J.P

Storm Drain #3

Station 88+70 to Station 95+70

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 7

Station 95+70 Lt
On 35th Ave
Looking North



So = 0.8900 %

Total Area	0.84	Ac.
Zoning Factor	0.95	
Ai	0.79	Ac.
For Concentration Time Street S	0.8900	%
Max. Dist.	560	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.90	cfs
Flow by	0.11	cfs
Total Qa	2.01	cfs
Y	0.20	ft.
T	8.16	ft.
V	2.43	fps
Inlet Type	M-1, L=10'	
Qin	1.69	cfs
Q Flow by	0.32	cfs
To Inlet No.	9	
Available Head		ft.
Length Connector Pipe	11	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 2.43 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet # 15

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 8.16' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.137 La = 14.678 L = (10 + 3') / 1.2

L/La = 0.738 a/Y = 0.17'/Y = 0.838

Qin/Qa = 0.841 Qin = 1.69

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

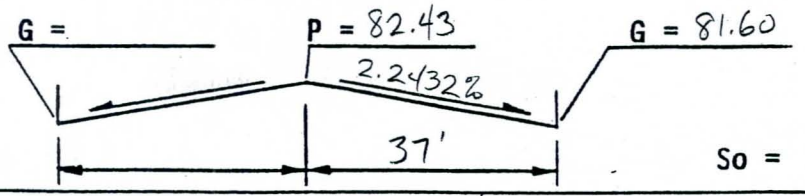
S =

V =

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 8

Station 95+65, Rt
On 35th Ave
Looking North



So = 0.8900 %

Total Area	0.84	Ac.
Zoning Factor	0.95	
Ai	0.79	Ac.
For Concentration Time Street S	0.8900	%
Max. Dist.	560	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.90	cfs
Flow by	0.35	cfs
Total Qa	2.25	cfs
Y	0.20	ft.
T	9.07	ft.
V	2.44	fps
Inlet Type	M-1, L=10'	
Qin	1.76	cfs
Q Flow by	0.49	cfs
To Inlet No.	10	
Available Head		ft.
Length Connector Pipe	61	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 2.44 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet # 16

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 9.07' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.137 La = 16.368 L = (10 + 3') / 1.2

L/La = 0.662 a/Y = 0.17'/Y = 0.835

Qin/Qa = 0.782 Qin = 1.76

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

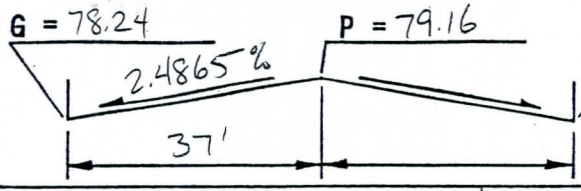
S =

V =

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	SUMP CONDITION	INLET NO. 9

Station 89+22, Lt
On 35th Ave
Looking North

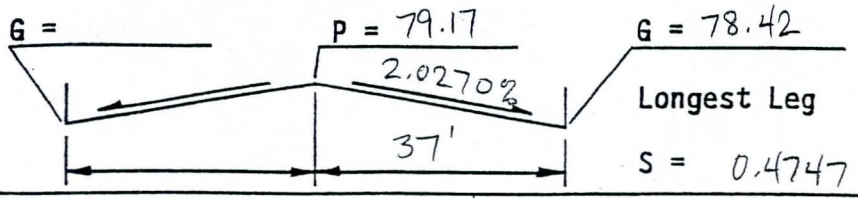


	Total Area	1.59 Ac.
	Zoning Factor	0.95
	Ai	1.51 Ac.
	For Concentration Time Street S	0.4747 %
	Max. Dist.	648 ft.
	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	3.62 cfs
From Inlet # 6 + 7	Flow by	0.83 + 0.32 cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	4.77 cfs
n = 0.015	Y on grade	0.32 ft.
T = Y/Sx 12.69' ≤ 25 ' Allowable	T on grade	12.69 ft.
$V = 2QaSx/Y^2$	V	2.38 fps
	Inlet Type	M-2, L=3'
See Chart Page 40:	Y sump	0.36 ft.
T = Y/Sx 14.48' ≤ 25 ' Allowable	T sump	14.48 ft.
	Qin	4.77 cfs
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	12 ft.
Q =	Diameter Connector Pipe	15 in.
S =		
V =	Depth of Catch Basin	4 ft.

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	SUMP CONDITION	INLET NO. 10

Station 89+18.75, Rt
On 35th Ave
Looking North



Longest Leg
S = 0.4747 %

	Total Area	1.59 Ac.
	Zoning Factor	0.95
	Ai	1.51 Ac.
	For Concentration Time Street S	0.4747 %
	Max. Dist.	646 ft.
	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	3.62 cfs
From Inlet # 5 + 8	Flow by	0.93 + 0.49 cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	5.04 cfs
n = 0.015	Y on grade	0.30 ft.
T = Y/Sx 14.72' ≤ 25 ' Allowable	T on grade	14.72 ft.
$V = 2QaSx/Y^2$	V	2.30 fps
	Inlet Type	M-2, L=3'
See Chart Page 40:	Y sump	0.37 ft.
T = Y/Sx 18.25' ≤ 25 ' Allowable	T sump	18.25 ft.
	Qin	5.04 cfs
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	61 ft.
Q =	Diameter Connector Pipe	15 in.
S =	Depth of Catch Basin	4 ft.
V =		

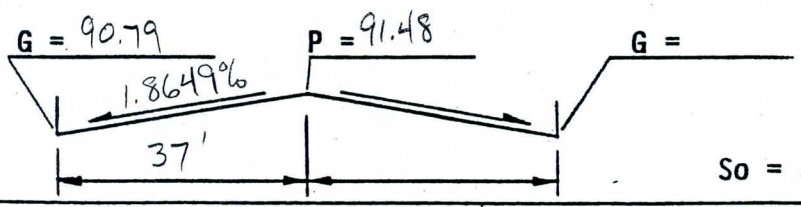
Design by: R.M. Date: 5/04 Checked by: J.P.

Storm Drain #4

Station 100+60 to 112+10

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 11

Station 112+10, Lt
On 35th Ave
Looking North



So = 0.3693 %

	Total Area	0.54 Ac.
	Zoning Factor	0.95
	Ai	0.52 Ac.
	For Concentration Time Street S	0.4812 %
	Max. Dist.	365 Ft.
V = 1.45 fps Tc = Max. Dist./(60 x V)	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	1.25 cfs
From Inlet #	Flow by	— cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	1.25 cfs
n = 0.015	Y	0.18 ft.
T = Y/Sx 9.63' ≤ 25 ' Allowable	T	9.63 ft.
$V = 2QaSx/Y^2$	V	1.45 fps
See Chart Page 28:	Inlet Type	M-1, L=6'
Qa/La = 0.121 La = 10.342 L = (6 + 3') / 1.2	Qin	1.03 cfs
L/La = 0.725 a/Y = 0.17'/Y = 0.946	Q Flow by	0.22 cfs
Qin/Qa = 0.824 Qin = 1.03	To Inlet No.	13
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	16 ft.
Q =	Diameter Connector Pipe	15 in.
S =		
V =	Depth of Catch Basin	4 ft.

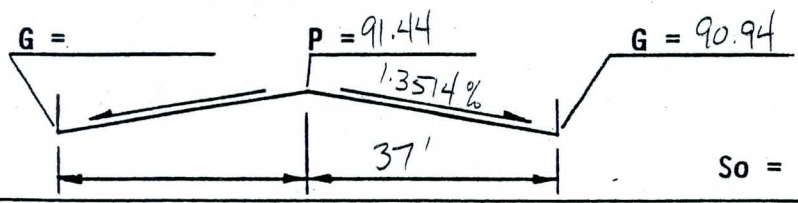
Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 12

Station 112+00, Rt

On 35th Ave

Looking North



So = 0.3693 %

Total Area	0.47	Ac.
Zoning Factor	0.95	
Ai	0.45	Ac.
For Concentration Time Street S	0.3693	%
Max. Dist.	375	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.08	cfs
Flow by	—	cfs
Total Qa	1.08	cfs
Y	0.151	ft.
T	11.15	ft.
V	1.29	fps
Inlet Type	M-1, L=6'	
Qin	0.86	cfs
Q Flow by	0.22	cfs
To Inlet No.	14	
Available Head		ft.
Length Connector Pipe	57	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 1.29 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet #

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 11.15' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.101 La = 10.679 L = (6 + 3') / 1.2

L/La = 0.702 a/Y = 0.17'/Y = 1.128

Qin/Qa = 0.795 Qin = 0.86

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

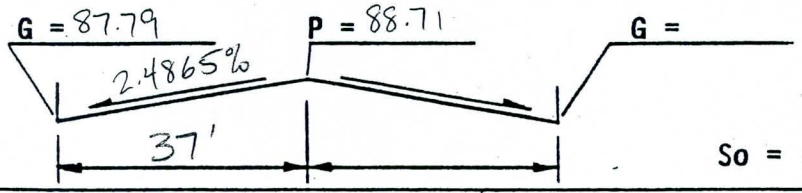
S =

V =

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 13

Station 106+55, Lt
On 35th Ave
Looking North



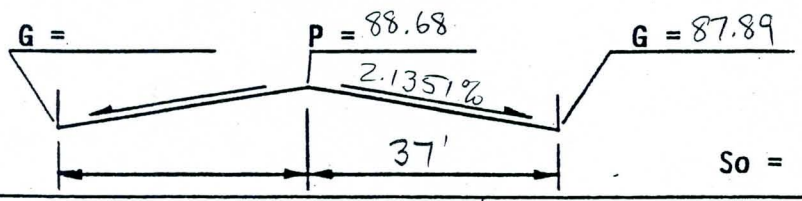
So = 0.5778 %

	Total Area	0.83 Ac.
	Zoning Factor	0.95
	Ai	0.79 Ac.
	For Concentration Time Street S	0.5778 %
	Max. Dist.	555 Ft.
V = 2.10 fps Tc = Max. Dist./(60 x V)	Tc	10 Min.
	I	2.40 in./hr.
Q = AiI	Q	1.90 cfs
From Inlet # 11	Flow by	0.22 cfs
$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$	Total Qa	2.12 cfs
n = 0.015	Y	0.22 ft.
T = Y/Sx 9.02' ≤ 25 ' Allowable	T	9.02 ft.
$V = 2QaSx/Y^2$	V	2.10 fps
See Chart Page 28:	Inlet Type	M-1, L=10'
Qa/La = 0.152 La = 13.932 L = (10 + 3') / 1.2	Qin	1.85 cfs
L/La = 0.778 a/Y = 0.17'/Y = 0.758	Q Flow by	0.27 cfs
Qin/Qa = 0.875 Qin = 1.85	To Inlet No.	15
Gutter Lip Elev. - HGL Elev. - 0.50'	Available Head	ft.
_____ - _____ - 0.50'		
☐ Manning Equation ☐ By Inspection	Length Connector Pipe	17 ft.
Q =	Diameter Connector Pipe	15 in.
S =		
V =	Depth of Catch Basin	4 ft.

Design by: R.M Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 14

Station 106+50, Rt
On 35th Ave
Looking North



So = 0.5778 %

Total Area	0.82	Ac.
Zoning Factor	0.95	
Ai	0.78	Ac.
For Concentration Time Street S	0.5778	%
Max. Dist.	550	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.87	cfs
Flow by	0.22	cfs
Total Qa	2.09	cfs
Y	0.21	ft.
T	9.87	ft.
V	2.01	fps
Inlet Type	M-1, L=10'	
Qin	1.76	cfs
Q Flow by	0.33	cfs
To Inlet No.	16	
Available Head		ft.
Length Connector Pipe	57	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 2.01 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet # 12

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 9.87' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.143 La = 14.663 L = (10 + 3') / 1.2

L/La = 0.739 a/Y = 0.17'/Y = 0.807

Qin/Qa = 0.844 Qin = 1.76

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

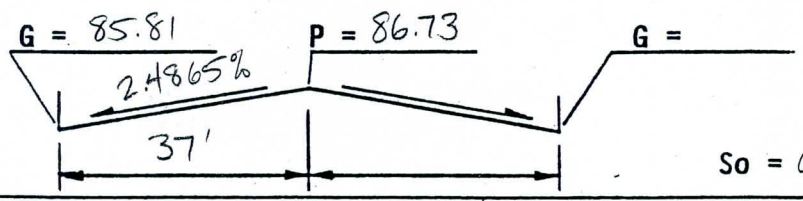
S =

V =

Design by: R.M. Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 15

Station 101+30, Lt
On 35th Ave
Looking North



Total Area	0.78	Ac.
Zoning Factor	0.95	
Ai	0.74	Ac.
For Concentration Time Street S	0.3273	%
Max. Dist.	525	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.78	cfs
Flow by	0.27	cfs
Total Qa	2.05	cfs
Y	0.25	ft.
T	9.91	ft.
V	1.68	fps
Inlet Type	M-1, L=10'	
Qin	1.94	cfs
Q Flow by	0.11	cfs
To Inlet No.	7	
Available Head		ft.
Length Connector Pipe	17	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 1.68 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet # 13

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 9.91' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.168 La = 12.197 L = (10 + 3') / 1.2

L/La = 0.888 a/Y = 0.17'/Y = 0.690

Qin/Qa = 0.946 Qin = 1.94

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

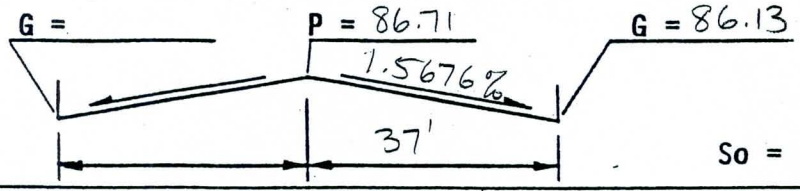
S =

V =

Design by: RM Date: 5/04 Checked by: J.P.

INLET DESIGN SHEET	ON GRADE CONDITION	INLET NO. 16

Station 101+25, Rt
On 35th Ave
Looking North



So = 0.3273 %

Total Area	0.78	Ac.
Zoning Factor	0.95	
Ai	0.74	Ac.
For Concentration Time Street S	0.3273	%
Max. Dist.	525	Ft.
Tc	10	Min.
I	2.40	in./hr.
Q	1.78	cfs
Flow by	0.33	cfs
Total Qa	2.11	cfs
Y	0.21	ft.
T	13.37	ft.
V	1.51	fps
Inlet Type	M-1, L=10'	
Qin	1.76	cfs
Q Flow by	0.35	cfs
To Inlet No.	8	
Available Head		ft.
Length Connector Pipe	55	ft.
Diameter Connector Pipe	15	in.
Depth of Catch Basin	4	ft.

V = 1.51 fps Tc = Max. Dist./(60 x V)

Q = AiI

From Inlet # 14

$Y = [(nQaSx) / (0.56So^{.5})]^{.375}$

n = 0.015

T = Y/Sx 13.37' ≤ 25 ' Allowable

$V = 2QaSx/Y^2$

See Chart Page 28:

Qa/La = 0.142 La = 14.892 L = (10 + 3') / 1.2

L/La = 0.727 a/Y = 0.17'/Y = 0.811

Qin/Qa = 0.835 Qin = 1.76

Gutter Lip Elev. - HGL Elev. - 0.50'

_____ - _____ - 0.50'

☐ Manning Equation ☐ By Inspection

Q =

S =

V =

Design by: R.M. Date: 5/04 Checked by: J.P.

Drainage Area Map

35th Avenue
Deer Valley Rd to Pinnacle Peak Rd
Project # ST85100174

Scale: 1"=200'

Pinnacle Peak Road

W PINNACLE PEAK RD

PT ADOBE

PT 1

CITY PARK SITE

Storm Drain #4

Storm Drain #3

Storm Drain #2

Storm Drain #1

35th Avenue

Adobe

Dam

Existing Storm Drain

Deer Valley Road

DEER VALLEY ELEMENTARY SCHOOL

W DEER VALLEY DR

W PARKSIDE LN

W PATRICK LN

W WALTER WAY

W KNUDSEN DR

W CASITAS DEL RIO DR

W VISTA BONITA DR

W FLOERS RD

W FINDERS RD

W ADOBE DAM RD

W WILLIAMS DR

W SANDS DR

W LOUISE DR

W TINA LN

W VIA DEL SOL DR

W VIA MONTOYA DR

W LOS GATOS DR

W DONALD DR

W FOOTHILL DR

W CREST LN

W ROBIN LN

W PARKSIDE TRL

W DALEY LN

W HIGHLANDS DR

W ADOBE MOUNTAIN DR

W ADOBE MTN ESTATES

ADOBE MOUNTAIN ESTATES

HIGHLANDS

TERRACINA

N 35TH AVE

N 34TH LN

N 34TH AVE

N 33RD DR

N 33RD AVE

N 32ND LN

N 32ND AVE

N 31ST DR

N 31ST AVE