DRAINAGE REPORT
MAPLE CANYON

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OVERVIEW

LOCATION

Situated between Interstate 5 and State Route 163 in the area known as Banker's Hill, Maple Canyon is the collection point for an approximate 100 acres of this mixed-used region of San Diego, California.

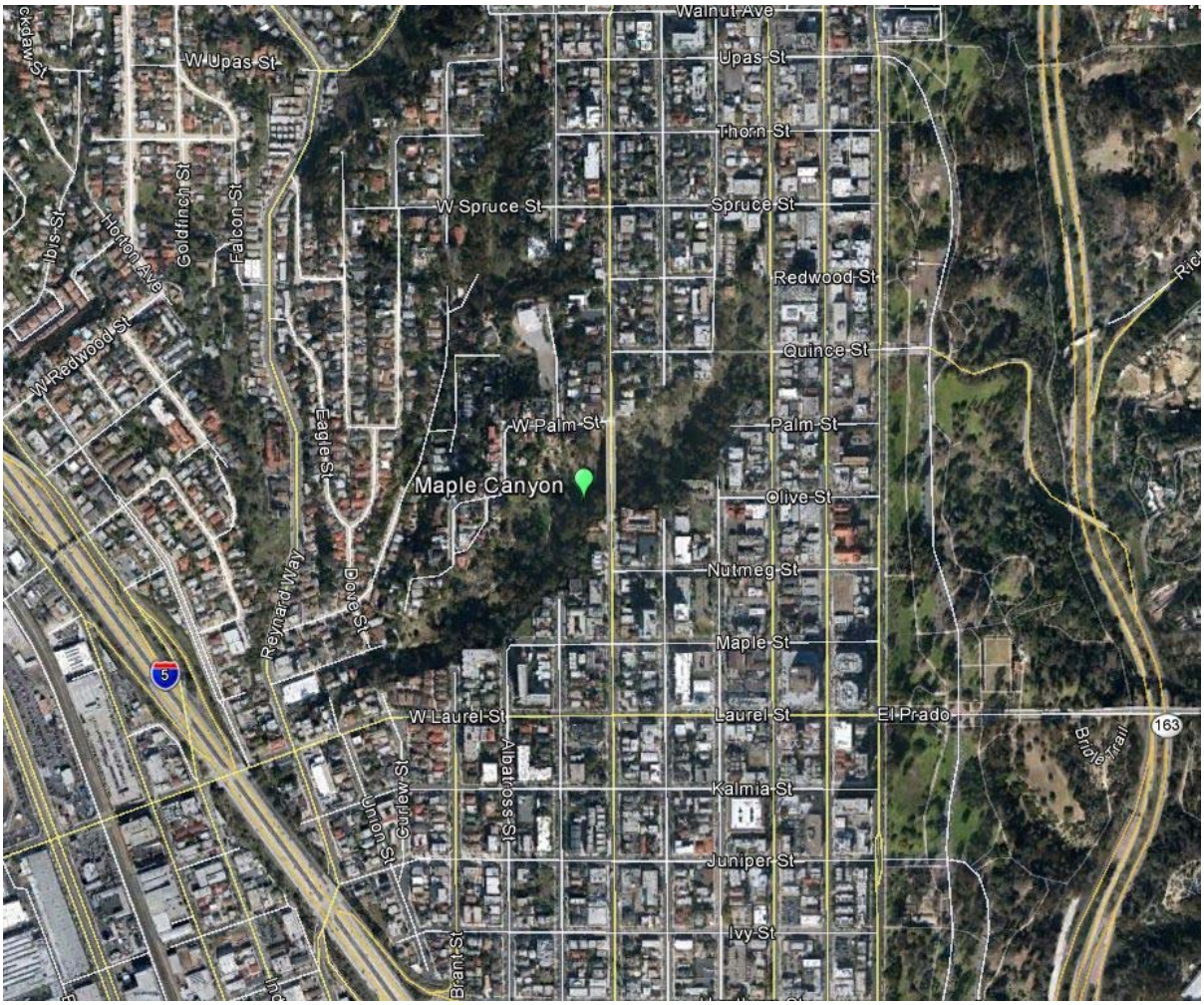


Figure 1: Vicinity Map

DESCRIPTION

Over the years the surrounding area around Maple Canyon has been developed from open space to residential and commercial properties. AECOM has been tasked with the responsibility of analyzing whether the existing storm drain systems tributary to Maple Canyon can adequately capture and convey the current-day rainfall runoff. In cases where the existing systems do not, those particular systems will be redesigned.

METHODOLOGY

The City of San Diego had previously contracted the initial hydrology study for Maple Canyon with CVALDO Corporation. CVALDO used AES as their hydrologic calculator and in order to mirror their results AES was also used for these hydrology calculations.

AES is a program designed to calculate peak discharge using various methods of hydrology. This project specifically used the County of San Diego's Rational Methodology module.

HYDROLOGY

The entire project watershed for Maple Canyon nearly totals 100 acres and is made up of multiple sub-watersheds. This relatively small total watershed area thus allows the use of the Rational Method as the basis for hydrology analysis.

The Rational Method as recommended in the City of San Diego's Drainage Design Manual and outlined in section 3 of the San Diego County Hydrology Manual is primarily used to analyze runoff for watersheds that do not exceed one square mile.

The rational method when dissected into its individual components can be expressed using the following formula:

Q = C * I * A

Where:
Q – peak flow rate (cubic feet per second)
C – runoff coefficient (unitless)
I – rainfall intensity (inches per hour)
A – tributary area (acres)

As stated in the City of San Diego's Drainage Design Manual, the entire project area will be designated as soil group D and the storm drain systems will be analyzed to convey the 50-year storm event. The 6-hour rainfall for the project area was determined to be 2.2 inches, through the use of the rainfall map from the County of San Diego Hydrology Manual (see Appendix A – Isopluvial Map).

Using the topography provided by Aguirre & Associates and with the aid of field visits and Google Earth, watershed limits and flow paths were delineated (as shown in Appendix B – Watershed & Node Exhibit). These boundaries provided the areas, as well as the limits that were needed to determine the runoff coefficients.

The amount of impervious land in each watershed (see Appendix A – Runoff Coefficients for Urban Areas), and the calculation of flow path slopes and corresponding flow lengths, in conjunction with San Diego County Hydrology Manual and AES methodology, along with other various hydrological pieces of information were input into AES (see Appendix B – AES Input Data) in order to determine the 50-year flow for each sub-watershed (see Appendix B – AES Output Tables).

The summary of the results from AES is listed in the table below.

		Q (cfs)
1	Brant & Barnson	9.20
2	Albatross & Olive	4.29
3	2nd (between Quince & Palm)	3.71
4	3rd & Quince	3.30
5	3rd (between Quince & Redwood)	3.30
6	4th & Redwood	68.42
7	4th & Quince	10.14
8	3rd & Palm	23.94
9	3rd (between Olive & Palm)	1.14
10	3rd & Olive	5.81
11	2nd & Olive	2.80
12	1st (Bridge)	5.19
13	1st & Nutmeg	45.76
14	Front (between Nutmeg & Maple)	9.48
15	Albatross & Maple	35.73

Table 1: Peak Discharge

HYDRAULICS

One program was used to analyze the efficiency of the existing drainage systems tributary to Maple Canyon and then another program was used to verify the design of proposed changes.

The peak discharge values calculated by AES, along with the roadway geometrics, were entered into a software program known as FlowMaster. FlowMaster was used to analyze each drainage system for capture efficiency, spread widths, and depth of flow (see Appendix C – FlowMaster Output Reports).

FlowMaster is a product of Bentley Systems, Inc. that is used primarily as a hydraulic analysis tool. The program calculates spread width lengths, interception percentages, bypass amounts, and depth of flow heights, which assist in the design of any storm drain project.

The runoff flow interception values of the inlets, calculated by FlowMaster, were then input in WSPGW, along with the proposed storm drain system design, in order to analyze for efficient pipe sizing (see Appendix C – WSPGW Output Reports).

WSPGW is a culvert analysis tool that uses peak flow rates to run calculations and efficiently size culverts of varying sizes, shapes, and materials by analyzing velocities, head losses, hydraulic pressure and hydraulic energy throughout entire systems of various storm drain layouts.

DESIGN CRITERIA

CONSTRAINTS

The project presented a few design challenges.

One of the main concerns in the design was to keep the roadway clear of grates in order to prevent any conflicts with bicyclists and/or pedestrians. A large majority of the existing inlets were grated inlets. The proposed design replaces these inlets with curb inlets. There were a handful of grates, however, that were able to remain due to their roadways terminating in a dead end or the design proved to have no other alternative.

Another key design concern was to keep the 50-year depth of flow within the curbs heights, 4" or 6" depending on system locations, and the 50-year flow width within 20 feet of the curb or dike, as discussed in section 2.2.1 of the San Diego County Drainage Design Manual.

STANDARD PLANS
Structures

The following structures were used throughout the proposed design of the storm drains:

- Storm Drain Cleanout – Type A-4, A-5, A-6 (D-9)
- Concrete Energy Dissipator (SDD-105)
- Curb Inlet – Type A-1 (SDD-115)
- Curb Inlet – Type B, B-1, B-2 (SDD-116)
- Concrete Anchor (SDD-114)
- Catch Basin – Type I (D-29)
- 18" RCP Culvert
- 24" RCP Culvert
- 30" RCP Culvert
- 36" RCP Culvert
- 42" RCP Culvert
- Pipe Collar (D-62)
- Concrete Curb & Gutter – Type G (SDG-151)

IMPROVEMENTS

EXISTING CONDITIONS

The project area can be broken down into the following 15 different drainage systems:

- 1 – Brant & Barnson
- 2 – Albatross & Olive
- 3 – 2nd (between Quince & Palm)
- 4 – 3rd & Quince
- 5 – 3rd (between Quince & Redwood)
- 6 – 4th & Redwood
- 7 – 4th & Quince
- 8 – 3rd & Palm
- 9 – 3rd (between Olive & Palm)
- 10 – 3rd & Olive
- 11 – 2nd & Olive
- 12 – 1st (bridge)
- 13 – 1st & Nutmeg
- 14 – Front (between Nutmeg & Maple)
- 15 – Albatross & Maple

The existing collection inlets for these systems were as follows:

1	Brant & Barnson	2 x Curb Inlet - Type C-1, 15’ Opening
2	Albatross & Olive	Curb Inlet - Type C-1, 15' Opening
3	2nd (between Quince & Palm)	Catch Basin - Type G-1
4	3rd & Quince	Curb Inlet - Type C
5	3rd (between Quince & Redwood)	Catch Basin - Type G-1
6	4th & Redwood	Catch Basin - Type G-1 2 x Catch Basin - Type G-2 2 x Curb Inlet - Type B-1, 8’ Opening
7	4th & Quince	Catch Basin - Type G-1 Catch Basin - Type G-2 Curb Inlet - Type C-1, 6’ Opening
8	3rd & Palm	5 x Catch Basin - Type G-1 Curb Inlet - Type A 2 x Curb Inlet - Type B
9	3rd (between Olive & Palm)	1’ x 1’ Area Grate
10	3rd & Olive	Catch Basin - Type G-2
11	2nd & Olive	Curb Inlet - Type B
12	1st (Bridge)	Curb Inlet - Type C-1, 6' Opening
13	1st & Nutmeg	2 x Catch Basin - Type G-1 2 x Curb Inlet - Type B
14	Front (between Nutmeg & Maple)	Sheet Flow Over the Hill
15	Albatross & Maple	Curb Inlet - Type C-2, 10’ Opening

Table 2: Existing Drainage Structures

PROPOSED DESIGN

Most of the existing systems did not meet the design criteria that were mentioned earlier. Based on the results of the hydraulic calculations for the existing systems, (see Appendix C for the results) the following changes were made:

1	Brant & Barnson	2 x Curb Inlet - Type B-1, 15’ Opening
2	Albatross & Olive	Curb Inlet - Type B-1, 15' Opening
3	2nd (between Quince & Palm)	Curb Inlet - Type A-1, 7’ Opening
4	3rd & Quince	Curb Inlet – Type A-1, 9.5’ Opening
5	3rd (between Quince & Redwood)	Catch Basin - Type I
6	4th & Redwood	3 x Curb Inlet - Type B-1, 20’ Opening Curb Inlet - Type B-2, 20’ Opening
7	4th & Quince	2 x Curb Inlet - Type B Curb Inlet - Type B-1, 14’ Opening
8	3rd & Palm	Keep Existing
9	3rd (between Olive & Palm)	2 x Catch Basin - Type I
10	3rd & Olive	2 x Curb Inlet - Type B
11	2nd & Olive	Keep Existing
12	1st (Bridge)	Curb Inlet - Type B-1, 7' Opening
13	1st & Nutmeg	Curb Inlet - Type B 3 x Curb Inlet - Type B-1, 21’ Opening
14	Front (between Nutmeg & Maple)	Curb Inlet - Type B Curb Inlet - Type B-1, 18' Opening
15	Albatross & Maple	Curb Inlet - Type B-2, 21’Opening Curb Inlet – Type B-1, 10’ Opening

Table 3: Proposed Drainage Structures

SUMMARY

The majority of the changes were in fact due to the design constraints. Grates were replaced by curb inlets and new inlets were only added to reduce the width and depth of runoff to existing systems. Plan view layouts and storm drain profiles can be viewed in Appendix D. FlowMaster, and WSPGW output and dissipater structure hydraulic calculations can be viewed in Appendix C.

The proposed storm drain construction will have negative impacts in the following locations:

- Nutmeg Street and First Ave – The existing driveway and wall will have to be reconstructed.
- 3rd and Quince – Landscape removal.
- South end of Second Avenue – Minor landscape impacts.
- Albatross Street and Olive Street – Minor landscape removal and reconstruction of curb & half street width.

SYSTEM 1 – The existing storm drain system begins its upstream extent just south of the intersection of Brant Street and Barnson Place and outlets at the canyon bottom. The existing runoff from this system's two watersheds currently flows to an on-grade 15' Curb Inlet - Type C-1 on the west side of Brant Street and a sag 15' Curb Inlet - Type C-1 on the east side of Brant Street, is conveyed through a series of 18" CMPs, and discharges at the bottom of the canyon.

The existing combination grate/curb inlets on the west and east sides of the street are replaced by a curb only inlet in order to remove the grate from the street.

	Spread Width (ft)	Depth of Flow (in)
1A Existing	9.39	3.27
1A Proposed	9.50	3.42
1B Existing	11.55	3.79
1B Proposed	11.72	3.83

Although both the spread width and the depth of flow increased for this system, they are both well within the constraints of the City's requirements.

Due to the declining condition of the existing pipes over the years, new 18" and 24" RCP is proposed to replace the entire existing system. The system will now terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 2 – The existing storm drain system begins its upstream extent at the corner of Albatross Street and Olive Street and outlets a few feet below the top of the canyon slope. The existing runoff from this system's watershed currently flows to an on-grade 15' Curb Inlet - Type C-1, is conveyed through an 18" CMP, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon.

The existing combination grate/curb inlet is replaced by a curb only inlet in order to remove the grate from the street. The new inlet is proposed to be relocated slightly upstream to avoid conflict with the adjacent property and to reduce hydraulic losses in the outlet pipe. The existing inlet was located in a sag location and so the curb and half-street width will have to be replaced to remove the sag.

	Spread Width (ft)	Depth of Flow (in)
Existing	8.86	3.15
Proposed	9.23	3.36

Although both the spread width and the depth of flow increased for this system, they are both well within the constraints of the City's requirements.

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 3 – The existing storm drain system begins its upstream extent just south of the intersection of 2nd Avenue and Quince Street and outlets a few feet below the top of the canyon slope. The existing runoff from this system's watershed currently flows to a sag Catch Basin - Type Single G-1, is conveyed through an 18" CMP, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon.

The existing grate inlet is replaced by a curb inlet in order to decrease the spread width and depth of flow. The new inlet is proposed to be relocated from the front of a house to the very end of the street due to the inlet serving as a sag location. The new location will decrease the amount of ponding directly in front of the driveway of that house. New curb & gutter is also proposed in order to direct runoff to the curb inlet.

	Spread Width (ft)	Depth of Flow (in)
Existing	21.30	5.11
Proposed	6.72	4.51

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 4 – The existing storm drain system begins its upstream extent at the corner of Quince Street and 3rd Avenue and outlets a few feet below the top of the canyon slope. The existing runoff from this system's watershed currently flows to a sag Curb Inlet - Type C, is conveyed through a 12" CMP, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon.

The existing inlet and 12" CMP pipe share the same concrete pad as a large SDG&E transformer. This transformer cannot be relocated and in order to design a system that meets the City of San Diego's Drainage Design manual requirements, the system must be relocated to the north of its existing location. The existing inlet and 12" CMP pipe will be abandoned and a new Type A-1 inlet and 18" RCP will be installed. The existing inlet is in a sag location and instead of re-grading the street, the wing of the Type A inlet will extend to the southernmost edge of the existing inlet. This will ensure that all of the runoff is captured by the inlet to eliminate ponding in the street.

	Spread Width (ft)	Depth of Flow (in)
Existing	10.56	3.56
Proposed	8.21	2.96

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 5 – The existing storm drain system begins its upstream extent at 3rd Avenue halfway between Quince Street and Redwood Street and outlets a few feet below the top of the canyon slope. The existing runoff from this system's watershed currently flows to a sag Catch Basin - Type Single G-1, is conveyed through a 12" CMP, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon.

The existing grate inlet is redesigned with three grates to help alleviate the flow. The grates will remain due to the low point being located in the center of the alleyway and there being no other viable options.

	Spread Width (ft)	Depth of Flow (in)
Existing	19.82	4.76
Proposed	14.80	3.55

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 6 – The existing storm drain system begins its upstream extent at the intersection of 4th Avenue and Redwood Street and outlets at the canyon bottom. The existing runoff from this system's watersheds currently flows to two sag 8' Curb Inlets - Type B-1, is conveyed through a series of 18" CMP and plastic pipes, and discharges at the bottom of the canyon.

The existing curb inlets are redesigned with longer wings and two new curb inlets were added upstream to help decrease the spread width and depth of flow.

	Spread Width (ft)	Depth of Flow (in)
6D-1 Proposed	19.72	5.87
6D-2 Proposed	23.92	6.88
6D Existing	257.02	62.82
6D Proposed	23.43	6.76
6E Existing	45.47	12.05
6E Proposed	27.54	7.75

Although the depths of flow of several of the new inlets are found to be slightly above 6", the flow depth overtopping the curb will not impact property outside of the City right-of-way.

Significant flow bypass from the two new inlets north of Redwood (6D-1 & 6D-2) towards the upsized inlet at the southeast corner (6D) warrants an addition of a cross gutter to adequately convey surface bypass flow. Existing gutter ponding and evidence of asphalt degradation also supports this improvement.

Likewise, even though the spread width of both of the upsized inlets is larger than the 20' maximum spread width, both inlets are designed to their full 20-foot standard length. Note that more curb inlets,

or longer inlets, at the proposed inlet locations does not lower the flow depth. The only way to reduce the spread width and depth of flow is to capture the runoff higher up in the watershed. The proposed improvements will significantly improve the existing conditions.

Due to the declining condition of the existing pipes over the years, new 42" RCP is proposed to replace the entire existing system. The system will now terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 7 – The existing storm drain system begins its upstream extent at the intersection of 4th Avenue and Quince Street and outlets halfway down the canyon slope. The existing runoff from this system's watersheds currently flows to one on grade Catch Basin - Type Single G-1, one sag Catch Basin - Type Double G-2, and one sag 6' Curb Inlet - Type C-1, is conveyed through a 15" CMP, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon.

The existing grate inlets are replaced by curb inlets and the existing combination grate/curb inlet is replaced by a curb only inlet in order to remove the grate from the street.

	Spread Width (ft)	Depth of Flow (in)
7A Existing	9.06	2.17
7A Proposed	8.36	3.15
7B Existing	26.57	6.38
7B Proposed	18.86	5.67
7C Existing	2.70	1.67
7C Proposed	7.91	3.04

Although both the spread width and the depth of flow increased for various parts of this system, they are both well within the constraints of the City's requirements.

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 8 – The existing storm drain system begins its upstream extent at the intersection of 4th Avenue and Palm Street and outlets at the canyon bottom. The existing runoff from this system's watersheds currently flows to eight different collection points, is conveyed through a series of 12" and 18" RCP, and discharges at the bottom of the canyon. All of these catch basins and curb inlets will remain except for one existing Catch Basin – Type I, which will be replaced to divert flow from system 9 and prevent erosion at its current outlet location along the slope.

	Spread Width (ft)	Depth of Flow (in)
8H Existing	4.69	1.13
8H Proposed	4.69	1.13

Due to a recent upgrade in this system, the only change to the outlet will be to add rock slope protection at the end of the existing headwall to account for the high discharge velocity.

SYSTEM 9 – The existing storm drain system begins its upstream extent at the end of 3rd Avenue between Palm Street and Olive Street and outlets halfway down the canyon slope. The existing runoff from this system's watershed currently flows to a sag 1' x 1' area grate, is conveyed through a 12" PVC, and discharges along the canyon slope eventually finding its way to the bottom of the canyon.

The existing area grate is replaced by a Catch Basin – Type I. A grate is allowed due to the inlet's location at the dead end of a minor street.

	Spread Width (ft)	Depth of Flow (in)
Existing	17.27	4.15
Proposed	10.56	2.54

Due to the system's minor flow, the collected rainfall will be discharged into system 8 and eventually into the canyon.

SYSTEM 10 – The existing storm drain system begins its upstream extent at the corner of Olive Street and 3rd Avenue and outlets a few feet below the top of the canyon slope. The existing runoff from this system's watershed currently flows to a sag Catch Basin - Type Double G-2, is conveyed through a series of 8" and 10" CMPs, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon.

Although AES reports a total discharge of 5.96 cfs for the entire system, each inlet was analyzed with the Q from its respective sub-watershed. These same sub-watershed flows were entered into WSPGW for the culvert analysis also.

The existing grate inlet is replaced by a curb inlet in order to remove the grate from the street. Upon analysis of the calculations, the existing inlet was not meeting the design constraints; however, neither would the new curb inlet. Instead of designing a curb inlet with a wing, another curb inlet is designed on the adjacent side of the corner to help alleviate flow and avoid conflict with the existing water service and meter.

	Spread Width (ft)	Depth of Flow (in)
Existing	23.23	6.35
Proposed	19.13	5.73
New Inlet	9.71	3.47

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 11 – The existing storm drain system begins its upstream extent just north of the intersection of 2nd Avenue and Nutmeg Street and outlets halfway down the canyon slope. The existing runoff from this system's watershed currently flows to a sag Curb Inlet - Type B, is conveyed through a series of 18" RCPs, and discharges halfway down the canyon slope, eventually finding its way to the bottom of the canyon.

The existing curb inlet was designed to meet all design constraints.

	Spread Width (ft)	Depth of Flow (in)
Existing	16.04	4.99

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to connect to the existing system at its original outlet point. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 12 – The existing storm drain system begins its upstream extent just south of the 1st Avenue bridge and outlets halfway down the canyon slope. The existing runoff from this system's watershed currently flows to a sag 6' Curb Inlet - Type C-1, is conveyed through a series of 12" CMPs, and discharges halfway down the canyon slope, eventually finding its way to the bottom of the canyon.

The existing combination grate/curb inlet is replaced by a curb only inlet in order to remove the grate from the street.

	Spread Width (ft)	Depth of Flow (in)
Existing	12.97	4.13
Proposed	18.91	5.68

Although both the spread width and the depth of flow increased for this system, they are both well within the constraints of the City's requirements.

Due to the declining condition of the existing pipes over the years, new 18" RCP is proposed to replace the entire existing system. The system will be extended to the bottom of the canyon, and terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 13 – The existing storm drain system begins its upstream extent at the intersection of 1st Avenue and Nutmeg Street and outlets halfway down the canyon slope. The existing runoff from this

system's watersheds currently flows to two Catch Basins - Type Single G-1 and two Curb Inlets - Type B, is conveyed through a series of 12" and 18" RCP, and discharges at the bottom of the canyon.

The existing grate inlets are replaced by curb inlets in order to remove the grate from the street and the existing curb inlets will be lengthened to help decrease the spread width and depth of flow.

	Spread Width (ft)	Depth of Flow (in)
13A Existing	14.03	3.37
13A Proposed	13.61	4.41
13B Existing	7.24	1.74
13B Proposed	6.33	2.66
13C Existing	232.71	56.99
13C Proposed	26.00	6.03
13D Existing	126.66	31.54
13D Proposed	6.61	6.00

Flow bypass from the inlet on the north side of Nutmeg Street (13A) flows towards the sag inlet on the eastside of First Avenue. Since this inlet is maximized to the standard width of 20-feet, a cross gutter will be added at the intersection of Nutmeg Street and First Avenue to adequately convey surface bypass flow. Existing gutter ponding and evidence of asphalt degradation also supports this improvement.

The existing cross section of First Avenue roadway at the new inlets 13C and 13D indicate that the spread width would reach the crown of First Avenue, then weir over towards 13D. Each inlet was analyzed under this condition with appropriate flow rates.

Although the depth of flow of 13C was determined to be slightly above 6", the flow depth overtopping the curb will not impact property outside of the City right-of-way since it will over-top the crown of the road and flow into inlet 13D before ponding into the City right-of-way.

Due to the declining condition of the existing pipes over the years, new 24", 30" and 36" RCP is proposed to replace the entire existing system. The system will now terminate with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

SYSTEM 14 – No storm drain system exists for this watershed outlet point. The existing flow collected along the street gutters and flowed over the hillside to find its way to the bottom of the canyon.

In order to protect the hill from eroding, two new curb inlets are proposed at two different runoff concentration points.

	Spread Width (ft)	Depth of Flow (in)
Proposed NEW-1	19.31	5.77
Proposed NEW-2	9.77	4.67

New 18” RCPs is proposed all the way down the canyon slope where it ties into system 13.

SYSTEM 15 – The existing storm drain system begins its upstream extent at the intersection of Albatross Street and Maple Street and outlets halfway down the canyon slope. The existing runoff from this system’s watersheds currently flows to a sag 10’ Curb Inlet - Type C-2, is conveyed through a series of 18” CMPs, and discharges along the canyon slope, eventually finding its way to the bottom of the canyon. The existing spread width and depth of flow is excessive.

The existing combination grate/curb inlet is replaced by a set of curb inlets. It is proposed to remove the grate from the street.

	Spread Width (ft)	**Depth of Flow (in)**
Existing	43.33	11.42
15-1 Proposed	15.83	8.57
15-2 Proposed	13.26	7.34

The flow rate is split between the two inlets, the upstream was designed as an on-grade curb inlet to draw the flow from the existing driveway area, and the second curb inlet is the sag-inlet. The existing concrete cross gutter is to be removed and replaced with a modified cross gutter that promotes positive flow at the intersection towards the new sag inlet. The flow depths exceed 6” but are contained within the City right-of-way and will not impact any private property.

New 36” RCPs is proposed all the way down the canyon slope and terminated with a concrete energy dissipator at the canyon bottom to account for the high discharge velocity.

REFERENCES

City of San Diego. Drainage Design Manual. April 1984.

County of San Diego. San Diego County Hydrology Manual. June 2003.

County of San Diego. Drainage Design Manual. July 2005

APPENDIX A

HYDROLOGY DATA

- Isopluvial Map
- Runoff Coefficients for Urban Areas

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County of San Diego Hydrology Manual

Rainfall Isopluvials

50 Year Rainfall Event - 6 Hours

Isopluvial (inches)

Orange County

Riverside County

Pacific Ocean

Imperial County

Mexico

OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
S.D. COUNTY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
SD
CHULA VISTA
IMPERIAL BEACH

PROJECT LOCATION

117°30' 117°15' 117°00' 116°45' 116°30' 116°15'
33°30' 33°15' 33°00' 32°45' 32°30'

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N W E S

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Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service

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APPENDIX B

HYDROLOGY CALCULATIONS

- AES Input Data
- AES Output
- Watershed & Node Exhibit

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AES INPUT DATA - EXISTING

System No.	Location	Soil Type	% Impervious	U/S Node	D/S Node	U/S Elev (ft)	D/S Elev (ft)	Length (ft)	Sub-Length (ft)	Slope	Area (ft^2)	Area (acres)	Sub-Area (acres)	Notes
1	Brant & Barnson	D	80	20110	20111	210	207	506	86	4%	65006	1.49	0.10	
				20111	20112	207	191		420				1.39	Curb Inlet
											65006			
2	Albatross & Olive	D	65	20200	20201	254	250	955	93	5%	59739	1.37	0.10	
				20201	20202	250	209		862				1.27	Curb Inlet
											59739			
6	4th & Redwood	D	85	20600	20601	295	294	762	60	1%	63147	1.45	0.10	
				20601	20602	294	288		702				1.35	Curb Inlet
				20602	20612									Pipe Flow
				20612	20612									Confluence #1
				20610	20611	299	298	1421	60	1%	311250	7.15	0.10	
				20611	20612	298	288		1361				7.05	Curb Inlet
				20612	20612									Confluence #2
				20612	20622									Pipe Flow
				20622	20622									Confluence #1
				20620	20621	294	293	1142	60	1%	94629	2.17	0.10	
				20621	20622	293	285		1082				2.07	Curb Inlet
				20622	20622									Confluence #2
				20622	20632									Pipe Flow
				20632	20632									Confluence #1
				20630	20631	296	295	1398	60	1%	264580	6.07	0.10	
				20631	20632	295	276		1338				5.97	Curb Inlet
				20632	20632									Confluence #1
											264580			
10	3rd & Olive	D	80	21000	21001	275	274	431	65	2%	62643	1.44	0.10	
				21001	21002	274	268		366				1.34	Curb Inlet
											62643			
14	Front (between Nutmeg & Maple)	D	80	21400	21401	234	230	490	91	5%	90512	2.08	0.10	
				21401	21402	230	211		399				1.98	Curb Inlet
											90512			

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AES INPUT DATA - PROPOSED & UPDATED

System No.	Location	Soil Type	% Impervious	U/S Node	D/S Node	U/S Elev (ft)	D/S Elev (ft)	Length (ft)	Sub-Length (ft)	Slope	Area (ft^2)	Area (acres)	Sub-Area (acres)	Notes
1	Brant & Barnson	D	80	1000	1001	254	250	1537	91	4%	63179	1.45	0.10	
				1001	1002	250	190		1446				1.35	Curb Inlet
				1002	1102									Pipe Flow
				1102	1102									Confluence #1
				1100	1101	211	208	541	91	4%	65842	1.51	0.10	
				1101	1102	208	191		450				1.41	Curb Inlet
				1102	1102									Confluence #2
											129021			
2	Albatross & Olive	D	65	2000	2001	254	250	920	93	5%	58903	1.35	0.10	
				2001	2002	250	210		827				1.25	Curb Inlet
											58903			
3	2nd (between Quince & Palm)	D	65	3000	3001	275	273	299	75	3%	41875	0.96	0.10	
				3001	3002	273	267		224				0.86	Curb Inlet
											41875			
4	3rd & Quince	D	80	4000	4001	275	271	205	91	4%	31287	0.72	0.10	
				4001	4002	271	266		114				0.62	Curb Inlet
											31287			
5	3rd (between Quince & Redwood)	D	80	5000	5001	279	272	171	98	8%	31577	0.72	0.10	
				5001	5002	272	266		73				0.62	Grate Inlet
											31577			
6	4th & Redwood	D	85	6000	6001	295	294	762	60	1%	63147	1.45	0.10	
				6001	6002	294	288		702				1.35	Grate Inlet
				6002	6102									Pipe Flow
				6102	6102									Confluence #1
				6100	6101	299	298	1421	60	1%	311250	7.15	0.10	
				6101	6102	298	288		1361				7.05	Grate Inlet
				6102	6102									Confluence #2
				6102	6202									Pipe Flow
				6202	6202									Confluence #1
				6200	6201	294	293	1142	60	1%	94629	2.17	0.10	
				6201	6202	293	285		1082				2.07	Grate Inlet
				6202	6202									Confluence #2
				6202	6212									Pipe Flow
				6212	6212									Confluence #1

6	4th & Redwood	D	85	6210	6211	288	285	280	75	4%	18409	0.42	0.10	
				6211	6212	285	276		280				0.32	Curb Inlet
				6212	6212									Confluence #1
				6212	6212									Confluence #2
				6220	6221	296	295	1327	65	2%	236561	5.43	0.10	
				6221	6222	295	276		1262				5.33	Curb Inlet
				6222	6212									Pipe Flow
				6212	6212									Confluence #2
				6212	6302									Pipe Flow
				6302	6302									Confluence #1
				6300	6301	288	284	257	88	5%	9611	0.22	0.10	
				6301	6302	284	276		169				0.12	Curb Inlet
				6302	6302									Confluence #2
				6302	6402									Pipe Flow
				6402	6402									Confluence #1
				6400	6401	296	295	1381	65	2%	281166	6.45	0.10	
				6401	6402	295	275		1316				6.35	Curb Inlet
				6402	6402									Confluence #2
											1014773			

7	4th & Quince	D	85	7000	7001	288	286	557	75	2%	41776	0.96	0.10	
				7001	7002	286	275		482				0.86	Grate Inlet
				7002	7003									Pipe Flow
				7003	7003									Confluence #1
				7100	7101	287	285	425	78	3%	52305	1.20	0.10	
				7101	7102	285	275		347				1.10	Grate Inlet
				7102	7003									Pipe Flow
				7003	7003									Confluence #2
				7003	7202									Pipe Flow
				7202	7202									Confluence #1
				7200	7201	277	276	339	60	1%	9802	0.23	0.10	
				7201	7202	276	273		279				0.13	Curb Inlet
				7202	7202									Confluence #2
											103883			

8	3rd & Palm	D	85	8000	8001	285	280	234	90	5%	13031	0.30	0.10	
				8001	8002	280	273		144				0.20	Grate Inlet
				8002	8003									Pipe Flow
				8003	8003									Confluence #1
				8100	8101	282	276	142	92	6%	16205	0.37	0.10	
				8101	8102	276	273		50				0.27	Grate Inlet
				8102	8003									Pipe Flow
				8003	8003									Confluence #2
				8003	8201									Pipe Flow

8	3rd & Palm	D	85	8201	8201									Confluence #1
				8200	8201	275	273	108	72	3%	4061	0.09	0.10	Grate Inlet
				8201	8201									Confluence #2
				8201	8301									Pipe Flow
				8301	8301									Confluence #1
				8300	8301	275	271	102	102	4%	2570	0.09	0.10	Grate Inlet
				8301	8301									Confluence #2
				8301	8301									Confluence #1
				8400	8401	287	285	572	75	2%	109895	2.52	0.10	
				8401	8402	285	273		497				2.42	Curb Inlet
				8402	8502									Pipe Flow
				8502	8502									Confluence #1
				8500	8501	275	274	411	60	1%	10254	0.24	0.10	
				8501	8502	274	272		351				0.14	Curb Inlet
				8502	8502									Confluence #2
				8502	8301									Pipe Flow
				8301	8301									Confluence #1
				8301	8302									Pipe Flow
				8302	8302									Confluence #1
				8600	8601	273	267	213	92	6%	24867	0.57	0.10	
				8601	8602	267	260		121				0.47	Curb Inlet
				8602	8302									Pipe Flow
				8302	8302									Confluence #2
				8700	8701	275	267	168	96	8%	11955	0.27	0.10	
				8701	8702	267	261		72				0.17	Grate Inlet
				8702	8302									Pipe Flow
				8302	8302									Confluence #3
											192838			

9	3rd (between Olive & Palm)	D	85	9000	9001	277	269	134	96	8%	10263	0.24	0.10	
				9001	9002	269	266		38				0.14	Grate Inlet
											10263			

10	3rd & Olive	D	80	10000	10001	275	274	431	65	2%	39482	0.91	0.10	
				10001	10002	274	268		366				0.81	Curb Inlet
				10002	10102									Pipe Flow
				10102	10102									Confluence #1
				10100	10101	271	269	149	75	2%	23161	0.53	0.10	
				10101	10102	269	268		74				0.43	Curb Inlet
				10102	10102									Confluence #2
											62643			

11	2nd & Olive	D	85	11000	11001	265	260	208	90	5%	25905	0.59	0.10	
				11001	11002	260	254		118				0.49	Curb Inlet
											25905			

12	1st (Bridge)	D	85	12000	12001	254	251	590	85	3%	50072	1.15	0.10	
				12001	12002	251	235		505				1.05	Curb Inlet
											50072			

13	1st & Nutmeg	D	80	13000	13001	274	271	1119	85	3%	212066	4.87	0.10	
				13001	13002	271	238		1034				4.77	Curb Inlet
				13002	13102									Pipe Flow
				13102	13102									Confluence #1
				13100	13101	270	266	818	91	4%	34748	0.80	0.10	
				13101	13102	266	236		727				0.70	Curb Inlet
				13102	13102									Confluence #2
				13102	13103									Pipe Flow
				13103	13103									Confluence #1
				13200	13201	270	268	1317	78	3%	283775	6.51	0.10	
13	1st & Nutmeg	D	80	13201	13202	268	232		1239				6.41	Curb Inlet
				13202	13302									Pipe Flow
				13302	13302									Confluence #1
				13300	13301	237	235	299	75	2%	52909	1.21	0.10	
				13301	13302	235	230		224				1.11	Curb Inlet
				13302	13302									Confluence #2
				13302	13103									Pipe Flow
				13103	13103									Confluence #2
											583498			

14	Front (between Nutmeg & Maple)	D	80	14000	14001	234	230	490	91	5%	72010	1.65	0.10	
				14001	14002	230	211		399				1.55	Curb Inlet
				14002	14102									Pipe Flow
				14102	14102									Confluence #1
				14100	14101	224	216	167	98	8%	18502	0.42	0.10	
				14101	14102	216	211		69				0.32	Curb Inlet
				14102	14102									Confluence #2
											90512			

15	Albatross & Maple	D	80	15000	15001	257	253	1731	91	4%	449951	10.33	0.10	
				15001	15002	253	184		1640				10.23	Curb Inlet
											449951			

```
**************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2012 Advanced Engineering Software (aes)
             Ver. 19.0 Release Date: 06/01/2012  License ID 1395

                          Analysis prepared by:




--------------------------------------------------------------------------
  FILE NAME: MAPLE.DAT
  TIME/DATE OF STUDY: 11:42 07/03/2014
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  50.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
  UPSTREAM ELEVATION(FEET) =    254.00
  DOWNSTREAM ELEVATION(FEET) =    250.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

**************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE   1002.00 IS CODE =  61
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0400
  STREET LENGTH(FEET) =  1446.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.37
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.06
  STREET FLOW TRAVEL TIME(MIN.) =   6.21   Tc(MIN.) =    9.46
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.842
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.35      SUBAREA RUNOFF(CFS) =    4.10
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       4.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.42
  FLOW VELOCITY(FEET/SEC.) =  4.38   DEPTH*VELOCITY(FT*FT/SEC.) =   1.38
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1002.00 =    1537.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1102.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.35
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.40
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    9.57
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1102.00 =    1572.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1102.00 TO NODE   1102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.57
  RAINFALL INTENSITY(INCH/HR) =   3.81
  TOTAL STREAM AREA(ACRES) =     1.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

****************************************************************************
  FLOW PROCESS FROM NODE   1100.00 TO NODE   1101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==============================================================================
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
  UPSTREAM ELEVATION(FEET) =    211.00
  DOWNSTREAM ELEVATION(FEET) =    207.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE   1101.00 TO NODE   1102.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0400
  STREET LENGTH(FEET) =   450.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.67
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =    5.03
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.772
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.41      SUBAREA RUNOFF(CFS) =    6.43
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       6.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.47
  FLOW VELOCITY(FEET/SEC.) =  4.81   DEPTH*VELOCITY(FT*FT/SEC.) =   1.71
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1102.00 =     541.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1102.00 TO NODE   1102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.03
  RAINFALL INTENSITY(INCH/HR) =   5.77
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.89
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.40     9.57        3.813          1.45
      2        6.89     5.03        5.772          1.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        9.20     5.03       5.772
      2        8.95     9.57       3.813

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.20   Tc(MIN.) =    5.03
  TOTAL AREA(ACRES) =        3.0
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1102.00 =    1572.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2000.00 TO NODE   2001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    93.00
  UPSTREAM ELEVATION(FEET) =    254.00
  DOWNSTREAM ELEVATION(FEET) =    250.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.163
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.41
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.41

****************************************************************************
  FLOW PROCESS FROM NODE   2001.00 TO NODE   2002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0500
  STREET LENGTH(FEET) =   827.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.10
  STREET FLOW TRAVEL TIME(MIN.) =   3.30   Tc(MIN.) =    7.46
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.478
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
```

```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.25      SUBAREA RUNOFF(CFS) =    3.97
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       4.29

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.92
  FLOW VELOCITY(FEET/SEC.) =  4.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.43
  LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2002.00 =     920.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3000.00 TO NODE   3001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    275.00
  DOWNSTREAM ELEVATION(FEET) =    273.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.384
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.41
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.41

****************************************************************************
  FLOW PROCESS FROM NODE   3001.00 TO NODE   3002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0300
  STREET LENGTH(FEET) =   224.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.89
  STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =    5.51
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.446
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.86      SUBAREA RUNOFF(CFS) =    3.33
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       3.71

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.33
  FLOW VELOCITY(FEET/SEC.) =  3.75   DEPTH*VELOCITY(FT*FT/SEC.) =   1.17
```

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 LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3002.00 =     299.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   4000.00 TO NODE   4001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
 UPSTREAM ELEVATION(FEET) =    275.00
 DOWNSTREAM ELEVATION(FEET) =    271.00
 ELEVATION DIFFERENCE(FEET) =      4.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE   4001.00 TO NODE   4002.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0400
 STREET LENGTH(FEET) =   114.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.88
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    6.30
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.65
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.92
 STREET FLOW TRAVEL TIME(MIN.) =   0.52   Tc(MIN.) =    3.77
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
 SUBAREA AREA(ACRES) =    0.62      SUBAREA RUNOFF(CFS) =    2.84
 TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.30

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.27
 FLOW VELOCITY(FEET/SEC.) =  4.11   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
 LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4002.00 =     205.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   5000.00 TO NODE   5001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
```

```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    98.00
  UPSTREAM ELEVATION(FEET) =    279.00
  DOWNSTREAM ELEVATION(FEET) =    272.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.856
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    97.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE   5001.00 TO NODE   5002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0800
  STREET LENGTH(FEET) =    73.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.11
  STREET FLOW TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =    3.11
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    0.62      SUBAREA RUNOFF(CFS) =    2.84
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.30

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.04
  FLOW VELOCITY(FEET/SEC.) =  5.38   DEPTH*VELOCITY(FT*FT/SEC.) =   1.44
  LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5002.00 =     171.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6000.00 TO NODE   6001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    295.00
```

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  DOWNSTREAM ELEVATION(FEET) =    294.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   6001.00 TO NODE   6002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =   702.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   5.03   Tc(MIN.) =    8.33
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.171
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    1.35      SUBAREA RUNOFF(CFS) =    4.62
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       4.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.27
  FLOW VELOCITY(FEET/SEC.) =  2.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.03
  LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6002.00 =     762.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6002.00 TO NODE   6102.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.51
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.96
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE   6000.00 TO NODE   6102.00 =     772.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6102.00 TO NODE   6102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =     1.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.96

**************************************************************************
  FLOW PROCESS FROM NODE   6100.00 TO NODE   6101.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    299.00
  DOWNSTREAM ELEVATION(FEET) =    298.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

**************************************************************************
  FLOW PROCESS FROM NODE   6101.00 TO NODE   6102.00 IS CODE =  61
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =  1361.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.40
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   7.06   Tc(MIN.) =   10.35
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.625
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    7.05      SUBAREA RUNOFF(CFS) =   20.96
  TOTAL AREA(ACRES) =        7.2        PEAK FLOW RATE(CFS) =      21.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  28.09
  FLOW VELOCITY(FEET/SEC.) =  3.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.17
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1361.0 FT WITH ELEVATION-DROP =  13.6 FT, IS   33.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   6102.00
```

```
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6102.00 =    1421.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6102.00 TO NODE   6102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.35
 RAINFALL INTENSITY(INCH/HR) =   3.63
 TOTAL STREAM AREA(ACRES) =     7.15
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.25

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.96     8.36        4.162          1.45
     2       21.25    10.35        3.625          7.15

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       22.12     8.36       4.162
     2       25.57    10.35       3.625

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      25.57   Tc(MIN.) =   10.35
 TOTAL AREA(ACRES) =        8.6
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6102.00 =    1421.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6102.00 TO NODE   6202.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0100
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
 (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
  AT DEPTH = 0.82 * DIAMETER)
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      25.57
 PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   10.57
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6202.00 =    1501.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6202.00 TO NODE   6202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.57
 RAINFALL INTENSITY(INCH/HR) =   3.58
 TOTAL STREAM AREA(ACRES) =     8.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.57

****************************************************************************
 FLOW PROCESS FROM NODE   6200.00 TO NODE   6201.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    294.00
  DOWNSTREAM ELEVATION(FEET) =    293.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   6201.00 TO NODE   6202.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =  1082.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.88
  STREET FLOW TRAVEL TIME(MIN.) =   7.42   Tc(MIN.) =   10.71
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.546
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    2.07      SUBAREA RUNOFF(CFS) =    6.02
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       6.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.67
  FLOW VELOCITY(FEET/SEC.) =  2.78   DEPTH*VELOCITY(FT*FT/SEC.) =   1.17
  LONGEST FLOWPATH FROM NODE   6200.00 TO NODE   6202.00 =    1142.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6202.00 TO NODE   6202.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.71
  RAINFALL INTENSITY(INCH/HR) =   3.55
  TOTAL STREAM AREA(ACRES) =     2.17
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.31

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       25.57    10.57        3.578         8.60
     2        6.31    10.71        3.546         2.17

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       31.80    10.57       3.578
     2       31.66    10.71       3.546

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      31.80   Tc(MIN.) =   10.57
 TOTAL AREA(ACRES) =       10.8
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6202.00 =    1501.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6202.00 TO NODE   6212.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0100
 FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
 (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
  AT DEPTH = 0.82 * DIAMETER)
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      31.80
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   10.59
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6212.00 =    1511.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6212.00 TO NODE   6212.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
                      ********************
              **ALL MEMORY BANKS ARE EMPTY - PROCESS IGNORED.**
                      ********************

****************************************************************************
 FLOW PROCESS FROM NODE   6212.00 TO NODE   6212.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   6210.00 TO NODE   6211.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
 UPSTREAM ELEVATION(FEET) =    288.00
 DOWNSTREAM ELEVATION(FEET) =    285.00
 ELEVATION DIFFERENCE(FEET) =      3.00
```

```
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.750
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE   6211.00 TO NODE   6212.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0400
 STREET LENGTH(FEET) =   280.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.47
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.24
   HALFSTREET FLOOD WIDTH(FEET) =    5.56
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.45
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
 STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =    4.10
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
 SUBAREA AREA(ACRES) =    0.42      SUBAREA RUNOFF(CFS) =    2.00
 TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       2.47

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.28
 FLOW VELOCITY(FEET/SEC.) =  3.81   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
 LONGEST FLOWPATH FROM NODE   6210.00 TO NODE   6212.00 =     355.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6212.00 TO NODE   6212.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        2.47     4.10       5.796        0.52
 LONGEST FLOWPATH FROM NODE   6210.00 TO NODE   6212.00 =     355.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       31.80    10.59       3.572       10.77
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6212.00 =    1511.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
```

```
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.79       4.10        5.796
      2      33.32      10.59        3.572

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      33.32   Tc(MIN.) =   10.59
  TOTAL AREA(ACRES) =       11.3

****************************************************************************
  FLOW PROCESS FROM NODE   6212.00 TO NODE   6212.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
  ***MEMORY BANK #  2 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE   6212.00 TO NODE   6212.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   6220.00 TO NODE   6221.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    296.00
  DOWNSTREAM ELEVATION(FEET) =    295.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.520
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   6221.00 TO NODE   6222.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0200
  STREET LENGTH(FEET) =  1262.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.58
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.72
  STREET FLOW TRAVEL TIME(MIN.) =   5.23   Tc(MIN.) =    8.75
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.040
```

```
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    5.33      SUBAREA RUNOFF(CFS) =   17.66
  TOTAL AREA(ACRES) =        5.4        PEAK FLOW RATE(CFS) =      17.99

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  19.84
  FLOW VELOCITY(FEET/SEC.) =  4.69   DEPTH*VELOCITY(FT*FT/SEC.) =   2.40
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1262.0 FT WITH ELEVATION-DROP =  25.2 FT, IS   25.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   6222.00
  LONGEST FLOWPATH FROM NODE   6220.00 TO NODE   6222.00 =    1327.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6222.00 TO NODE   6212.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.99
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    8.78
  LONGEST FLOWPATH FROM NODE   6220.00 TO NODE   6212.00 =    1337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6212.00 TO NODE   6212.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       17.99     8.78       4.032        5.43
  LONGEST FLOWPATH FROM NODE   6220.00 TO NODE   6212.00 =    1337.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       33.32    10.59       3.572       11.29
  LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6212.00 =    1511.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      45.60       8.78        4.032
      2      49.26      10.59        3.572

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      49.26   Tc(MIN.) =   10.59
  TOTAL AREA(ACRES) =       16.7

****************************************************************************
  FLOW PROCESS FROM NODE   6212.00 TO NODE   6302.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    72.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      49.26
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   10.78
  LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6302.00 =    1583.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6302.00 TO NODE   6302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.78
  RAINFALL INTENSITY(INCH/HR) =   3.53
  TOTAL STREAM AREA(ACRES) =    16.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.26

****************************************************************************
  FLOW PROCESS FROM NODE   6300.00 TO NODE   6301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    88.00
  UPSTREAM ELEVATION(FEET) =    288.00
  DOWNSTREAM ELEVATION(FEET) =    284.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.854
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   6301.00 TO NODE   6302.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0500
  STREET LENGTH(FEET) =   157.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.19
    HALFSTREET FLOOD WIDTH(FEET) =    3.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
```

```
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =    3.59
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.12      SUBAREA RUNOFF(CFS) =    0.57
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       1.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.21   HALFSTREET FLOOD WIDTH(FEET) =   4.17
  FLOW VELOCITY(FEET/SEC.) =  3.58   DEPTH*VELOCITY(FT*FT/SEC.) =   0.75
  LONGEST FLOWPATH FROM NODE   6300.00 TO NODE   6302.00 =     245.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6302.00 TO NODE   6302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.59
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.05

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       49.26    10.78        3.531         16.72
      2        1.05     3.59        5.796          0.22

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       17.45     3.59        5.796
      2       49.89    10.78        3.531

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      49.89   Tc(MIN.) =   10.78
  TOTAL AREA(ACRES) =       16.9
  LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6302.00 =    1583.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   6302.00 TO NODE   6402.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      49.89
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   10.92
  LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6402.00 =    1633.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   6402.00 TO NODE   6402.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.92
  RAINFALL INTENSITY(INCH/HR) =   3.50
  TOTAL STREAM AREA(ACRES) =    16.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.89

****************************************************************************
  FLOW PROCESS FROM NODE   6400.00 TO NODE   6401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    296.00
  DOWNSTREAM ELEVATION(FEET) =    295.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.520
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   6401.00 TO NODE   6402.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0200
  STREET LENGTH(FEET) =  1316.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
  STREET FLOW TRAVEL TIME(MIN.) =   5.25   Tc(MIN.) =    8.77
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.035
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    6.35      SUBAREA RUNOFF(CFS) =   21.01
  TOTAL AREA(ACRES) =        6.4        PEAK FLOW RATE(CFS) =      21.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  22.47
  FLOW VELOCITY(FEET/SEC.) =  4.86   DEPTH*VELOCITY(FT*FT/SEC.) =   2.62
```

```
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1316.0 FT WITH ELEVATION-DROP =  26.3 FT, IS   30.2 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   6402.00
 LONGEST FLOWPATH FROM NODE   6400.00 TO NODE   6402.00 =    1381.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   6402.00 TO NODE   6402.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.77
 RAINFALL INTENSITY(INCH/HR) =   4.03
 TOTAL STREAM AREA(ACRES) =     6.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.34

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       49.89    10.92        3.503         16.94
     2       21.34     8.77        4.035          6.45

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1       64.65     8.77        4.035
     2       68.42    10.92        3.503

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      68.42   Tc(MIN.) =   10.92
 TOTAL AREA(ACRES) =       23.4
 LONGEST FLOWPATH FROM NODE   6100.00 TO NODE   6402.00 =    1633.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   7000.00 TO NODE   7001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
 UPSTREAM ELEVATION(FEET) =    288.00
 DOWNSTREAM ELEVATION(FEET) =    286.00
 ELEVATION DIFFERENCE(FEET) =      2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.148
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE   7001.00 TO NODE   7002.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0200
 STREET LENGTH(FEET) =   482.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.32
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =    5.93
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.193
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.86      SUBAREA RUNOFF(CFS) =    3.66
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       4.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.65
  FLOW VELOCITY(FEET/SEC.) =  3.27   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7002.00 =     557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7002.00 TO NODE   7003.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.25
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.09
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    5.96
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7003.00 =     567.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7003.00 TO NODE   7003.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.96
  RAINFALL INTENSITY(INCH/HR) =   5.18
  TOTAL STREAM AREA(ACRES) =     0.96
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.09

****************************************************************************
  FLOW PROCESS FROM NODE   7100.00 TO NODE   7101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    78.00
  UPSTREAM ELEVATION(FEET) =    287.00
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  DOWNSTREAM ELEVATION(FEET) =    285.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.252
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   7101.00 TO NODE   7102.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0300
  STREET LENGTH(FEET) =   347.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.07
  STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =    4.86
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    1.10      SUBAREA RUNOFF(CFS) =    5.23
  TOTAL AREA(ACRES) =        1.2        PEAK FLOW RATE(CFS) =       5.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.22
  FLOW VELOCITY(FEET/SEC.) =  4.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.45
  LONGEST FLOWPATH FROM NODE   7100.00 TO NODE   7102.00 =     425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7102.00 TO NODE   7003.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.70
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.70
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    4.89
  LONGEST FLOWPATH FROM NODE   7100.00 TO NODE   7003.00 =     435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7003.00 TO NODE   7003.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.89
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.09     5.96        5.176          0.96
      2        5.70     4.89        5.796          1.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        9.06     4.89       5.796
      2        9.18     5.96       5.176

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.18   Tc(MIN.) =    5.96
  TOTAL AREA(ACRES) =        2.2
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7003.00 =     567.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7003.00 TO NODE   7202.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.24
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.18
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.17
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7202.00 =     647.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7202.00 TO NODE   7202.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.17
  RAINFALL INTENSITY(INCH/HR) =   5.06
  TOTAL STREAM AREA(ACRES) =     2.16
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.18

****************************************************************************
  FLOW PROCESS FROM NODE   7200.00 TO NODE   7201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
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  UPSTREAM ELEVATION(FEET) =    277.00
  DOWNSTREAM ELEVATION(FEET) =    276.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   7201.00 TO NODE   7202.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =   279.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =   2.70   Tc(MIN.) =    5.99
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.158
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.13      SUBAREA RUNOFF(CFS) =    0.55
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       0.97

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.46
  FLOW VELOCITY(FEET/SEC.) =  1.82   DEPTH*VELOCITY(FT*FT/SEC.) =   0.46
  LONGEST FLOWPATH FROM NODE   7200.00 TO NODE   7202.00 =     339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   7202.00 TO NODE   7202.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.99
  RAINFALL INTENSITY(INCH/HR) =   5.16
  TOTAL STREAM AREA(ACRES) =     0.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.18     6.17        5.059          2.16
      2        0.97     5.99        5.158          0.23
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        9.98     5.99       5.158
      2       10.14     6.17       5.059

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.14   Tc(MIN.) =    6.17
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE   7000.00 TO NODE   7202.00 =     647.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8000.00 TO NODE   8001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    285.00
  DOWNSTREAM ELEVATION(FEET) =    280.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.700
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   8001.00 TO NODE   8002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0500
  STREET LENGTH(FEET) =   144.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.95
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    3.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.73
  STREET FLOW TRAVEL TIME(MIN.) =   0.67   Tc(MIN.) =    3.37
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.20      SUBAREA RUNOFF(CFS) =    0.95
```

```
  TOTAL AREA(ACRES) =        0.3        PEAK FLOW RATE(CFS) =       1.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   5.07
  FLOW VELOCITY(FEET/SEC.) =  3.80   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8002.00 =     234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8002.00 TO NODE   8003.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.43
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    3.41
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8003.00 =     244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8003.00 TO NODE   8003.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.41
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.43

****************************************************************************
  FLOW PROCESS FROM NODE   8100.00 TO NODE   8101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    92.00
  UPSTREAM ELEVATION(FEET) =    282.00
  DOWNSTREAM ELEVATION(FEET) =    276.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.588
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   8101.00 TO NODE   8102.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0600
  STREET LENGTH(FEET) =    50.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.21
    HALFSTREET FLOOD WIDTH(FEET) =    4.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
  STREET FLOW TRAVEL TIME(MIN.) =   0.21   Tc(MIN.) =    2.80
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.27      SUBAREA RUNOFF(CFS) =    1.28
  TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       1.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =   5.48
  FLOW VELOCITY(FEET/SEC.) =  4.20   DEPTH*VELOCITY(FT*FT/SEC.) =   0.99
  LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8102.00 =     142.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8102.00 TO NODE   8003.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.76
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    2.84
  LONGEST FLOWPATH FROM NODE   8100.00 TO NODE   8003.00 =     152.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8003.00 TO NODE   8003.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    2.84
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.43     3.41        5.796          0.30
      2        1.76     2.84        5.796          0.37

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
```

```
     1        2.95     2.84       5.796
     2        3.18     3.41       5.796

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.18   Tc(MIN.) =    3.41
  TOTAL AREA(ACRES) =        0.7
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8003.00 =     244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8003.00 TO NODE   8201.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.91
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.18
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    3.45
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8201.00 =     254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8201.00 TO NODE   8201.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.45
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.18

****************************************************************************
  FLOW PROCESS FROM NODE   8200.00 TO NODE   8201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    72.00
  UPSTREAM ELEVATION(FEET) =    275.00
  DOWNSTREAM ELEVATION(FEET) =    273.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.042
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   8201.00 TO NODE   8201.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.04
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.48
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.18     3.45        5.796          0.67
      2        0.48     3.04        5.796          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        3.66     3.04       5.796
      2        3.66     3.45       5.796

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.66   Tc(MIN.) =    3.45
  TOTAL AREA(ACRES) =        0.8
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8201.00 =     254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8201.00 TO NODE   8301.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.10
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.66
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    3.48
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8301.00 =     264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8301.00 TO NODE   8301.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.48
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.66

****************************************************************************
  FLOW PROCESS FROM NODE   8300.00 TO NODE   8301.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0400
  STREET LENGTH(FEET) =   102.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
  STREET FLOW TRAVEL TIME(MIN.) =   0.40   Tc(MIN.) =    3.88
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.10      SUBAREA RUNOFF(CFS) =    0.48
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       4.14

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.17
  FLOW VELOCITY(FEET/SEC.) =  4.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE   8200.00 TO NODE   8301.00 =     174.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8301.00 TO NODE   8301.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.88
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.14

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.66     3.48        5.796          0.77
      2        4.14     3.88        5.796          0.87

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        7.37     3.48       5.796
      2        7.80     3.88       5.796

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.80   Tc(MIN.) =    3.88
  TOTAL AREA(ACRES) =        1.6
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8301.00 =     264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8301.00 TO NODE   8301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE   8301.00 TO NODE   8301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   8400.00 TO NODE   8401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    287.00
  DOWNSTREAM ELEVATION(FEET) =    285.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.148
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   8401.00 TO NODE   8402.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0200
  STREET LENGTH(FEET) =   497.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.34
  STREET FLOW TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =    5.47
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.473
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    2.42      SUBAREA RUNOFF(CFS) =   10.86
  TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =      11.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.08
  FLOW VELOCITY(FEET/SEC.) =  4.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.87
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8402.00 =     572.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8402.00 TO NODE   8502.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
```

```
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.31
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    5.68
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8502.00 =     652.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8502.00 TO NODE   8502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.68
  RAINFALL INTENSITY(INCH/HR) =   5.34
  TOTAL STREAM AREA(ACRES) =     2.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.31

****************************************************************************
  FLOW PROCESS FROM NODE   8500.00 TO NODE   8501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    275.00
  DOWNSTREAM ELEVATION(FEET) =    274.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   8501.00 TO NODE   8502.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =   351.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =   3.39   Tc(MIN.) =    6.68
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.808
```

```
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.14      SUBAREA RUNOFF(CFS) =    0.55
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       0.95

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   6.38
  FLOW VELOCITY(FEET/SEC.) =  1.80   DEPTH*VELOCITY(FT*FT/SEC.) =   0.46
  LONGEST FLOWPATH FROM NODE   8500.00 TO NODE   8502.00 =     411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8502.00 TO NODE   8502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.68
  RAINFALL INTENSITY(INCH/HR) =   4.81
  TOTAL STREAM AREA(ACRES) =     0.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.31     5.68        5.339          2.52
      2        0.95     6.68        4.808          0.24

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       12.11     5.68       5.339
      2       11.13     6.68       4.808

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.11   Tc(MIN.) =    5.68
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8502.00 =     652.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8502.00 TO NODE   8301.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.11
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    5.89
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8301.00 =     732.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8301.00 TO NODE   8301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
```

```
  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       12.11     5.89       5.213        2.76
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8301.00 =     732.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.80     3.88       5.796        1.64
  LONGEST FLOWPATH FROM NODE   8000.00 TO NODE   8301.00 =     264.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      15.77       3.88        5.796
      2      19.12       5.89        5.213

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.12   Tc(MIN.) =    5.89
  TOTAL AREA(ACRES) =        4.4

****************************************************************************
  FLOW PROCESS FROM NODE   8301.00 TO NODE   8302.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.12
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =    6.24
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8302.00 =     862.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8302.00 TO NODE   8302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.24
  RAINFALL INTENSITY(INCH/HR) =   5.02
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.12

****************************************************************************
  FLOW PROCESS FROM NODE   8600.00 TO NODE   8601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    92.00
  UPSTREAM ELEVATION(FEET) =    273.00
  DOWNSTREAM ELEVATION(FEET) =    267.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.588
```

```
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE   8601.00 TO NODE   8602.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0600
 STREET LENGTH(FEET) =   121.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.38
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    6.46
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.13
 STREET FLOW TRAVEL TIME(MIN.) =   0.45   Tc(MIN.) =    3.04
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
 SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    3.80
 TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       4.28

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.51
 FLOW VELOCITY(FEET/SEC.) =  5.07   DEPTH*VELOCITY(FT*FT/SEC.) =   1.50
 LONGEST FLOWPATH FROM NODE   8600.00 TO NODE   8602.00 =     213.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8602.00 TO NODE   8302.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0100
 FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.31
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.28
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    3.07
 LONGEST FLOWPATH FROM NODE   8600.00 TO NODE   8302.00 =     223.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   8302.00 TO NODE   8302.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.07
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.28

****************************************************************************
  FLOW PROCESS FROM NODE   8700.00 TO NODE   8701.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    96.00
  UPSTREAM ELEVATION(FEET) =    275.00
  DOWNSTREAM ELEVATION(FEET) =    267.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.436
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE   8701.00 TO NODE   8702.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0800
  STREET LENGTH(FEET) =    72.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.18
    HALFSTREET FLOOD WIDTH(FEET) =    2.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
  STREET FLOW TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =    2.70
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.17      SUBAREA RUNOFF(CFS) =    0.81
  TOTAL AREA(ACRES) =        0.3        PEAK FLOW RATE(CFS) =       1.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.21   HALFSTREET FLOOD WIDTH(FEET) =   4.00
  FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   0.95
  LONGEST FLOWPATH FROM NODE   8700.00 TO NODE   8702.00 =     168.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   8702.00 TO NODE   8302.00 IS CODE =  41
```

```
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
========================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.81
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.28
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    2.75
  LONGEST FLOWPATH FROM NODE   8700.00 TO NODE   8302.00 =     178.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   8302.00 TO NODE   8302.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    2.75
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     0.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       19.12     6.24        5.025          4.40
      2        4.28     3.07        5.796          0.90
      3        1.28     2.75        5.796          0.27

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       13.52     2.75       5.796
      2       14.98     3.07       5.796
      3       23.94     6.24       5.025

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.94   Tc(MIN.) =    6.24
  TOTAL AREA(ACRES) =        5.6
  LONGEST FLOWPATH FROM NODE   8400.00 TO NODE   8302.00 =     862.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   9000.00 TO NODE   9001.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    96.00
  UPSTREAM ELEVATION(FEET) =    277.00
  DOWNSTREAM ELEVATION(FEET) =    269.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.436
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48
```

```
**************************************************************************
  FLOW PROCESS FROM NODE   9001.00 TO NODE   9002.00 IS CODE =  61
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0800
  STREET LENGTH(FEET) =    38.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.17
    HALFSTREET FLOOD WIDTH(FEET) =    2.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =    2.57
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    0.14      SUBAREA RUNOFF(CFS) =    0.67
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       1.14

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   3.67
  FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  LONGEST FLOWPATH FROM NODE   9000.00 TO NODE   9002.00 =     134.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  10000.00 TO NODE  10001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    275.00
  DOWNSTREAM ELEVATION(FEET) =    274.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.897
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

**************************************************************************
  FLOW PROCESS FROM NODE  10001.00 TO NODE  10002.00 IS CODE =  61
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0200
  STREET LENGTH(FEET) =   366.00   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.80
  STREET FLOW TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =    6.07
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.117
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    0.81      SUBAREA RUNOFF(CFS) =    3.27
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       3.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.15
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.05
  LONGEST FLOWPATH FROM NODE  10000.00 TO NODE  10002.00 =     431.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  10002.00 TO NODE  10102.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.10
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.68
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.10
  LONGEST FLOWPATH FROM NODE  10000.00 TO NODE  10102.00 =     441.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  10102.00 TO NODE  10102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.10
  RAINFALL INTENSITY(INCH/HR) =   5.10
  TOTAL STREAM AREA(ACRES) =     0.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.68

****************************************************************************
  FLOW PROCESS FROM NODE  10100.00 TO NODE  10101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
 UPSTREAM ELEVATION(FEET) =    271.00
 DOWNSTREAM ELEVATION(FEET) =    269.00
 ELEVATION DIFFERENCE(FEET) =      2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.485
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE  10101.00 TO NODE  10102.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0200
 STREET LENGTH(FEET) =    74.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.44
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    6.63
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.59
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
 STREET FLOW TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =    3.96
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
 SUBAREA AREA(ACRES) =    0.43      SUBAREA RUNOFF(CFS) =    1.97
 TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       2.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.43
 FLOW VELOCITY(FEET/SEC.) =  2.93   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10102.00 =     149.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  10102.00 TO NODE  10102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    3.96
 RAINFALL INTENSITY(INCH/HR) =   5.80
 TOTAL STREAM AREA(ACRES) =     0.53
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.43

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```

1	3.68	6.10	5.099	0.91
2	2.43	3.96	5.796	0.53

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	4.82	3.96	5.796
2	5.81	6.10	5.099

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 5.81 Tc(MIN.) = 6.10
TOTAL AREA(ACRES) = 1.4
LONGEST FLOWPATH FROM NODE 10000.00 TO NODE 10102.00 = 441.00 FEET.

****
FLOW PROCESS FROM NODE 11000.00 TO NODE 11001.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==
GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) = 95
INITIAL SUBAREA FLOW-LENGTH(FEET) = 90.00
UPSTREAM ELEVATION(FEET) = 265.00
DOWNSTREAM ELEVATION(FEET) = 260.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.700
50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.48
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.48

****
FLOW PROCESS FROM NODE 11001.00 TO NODE 11002.00 IS CODE = 61

>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
==
REPRESENTATIVE SLOPE = 0.0500
STREET LENGTH(FEET) = 118.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 24.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 12.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.64
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.24
HALFSTREET FLOOD WIDTH(FEET) = 5.56
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.84
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.91
STREET FLOW TRAVEL TIME(MIN.) = 0.51 Tc(MIN.) = 3.21
50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) = 95

```
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
 SUBAREA AREA(ACRES) =    0.49      SUBAREA RUNOFF(CFS) =    2.33
 TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       2.80

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.28
 FLOW VELOCITY(FEET/SEC.) =  4.32   DEPTH*VELOCITY(FT*FT/SEC.) =   1.18
 LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11002.00 =     208.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12000.00 TO NODE  12001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
 UPSTREAM ELEVATION(FEET) =    254.00
 DOWNSTREAM ELEVATION(FEET) =    251.00
 ELEVATION DIFFERENCE(FEET) =      3.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.052
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE  12001.00 TO NODE  12002.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0300
 STREET LENGTH(FEET) =   505.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.85
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    8.27
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.55
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.04
 STREET FLOW TRAVEL TIME(MIN.) =   2.37   Tc(MIN.) =    5.42
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.503
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
 SUBAREA AREA(ACRES) =    1.05      SUBAREA RUNOFF(CFS) =    4.74
 TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       5.19

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.81
 FLOW VELOCITY(FEET/SEC.) =  4.03   DEPTH*VELOCITY(FT*FT/SEC.) =   1.38
 LONGEST FLOWPATH FROM NODE  12000.00 TO NODE  12002.00 =     590.00 FEET.
```

```
**************************************************************************
  FLOW PROCESS FROM NODE  13000.00 TO NODE  13001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    274.00
  DOWNSTREAM ELEVATION(FEET) =    271.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.379
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

**************************************************************************
  FLOW PROCESS FROM NODE  13001.00 TO NODE  13002.00 IS CODE =  61
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0300
  STREET LENGTH(FEET) =  1034.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
  STREET FLOW TRAVEL TIME(MIN.) =   3.70   Tc(MIN.) =    7.08
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.631
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    4.77      SUBAREA RUNOFF(CFS) =   17.45
  TOTAL AREA(ACRES) =       4.9        PEAK FLOW RATE(CFS) =      17.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.77
  FLOW VELOCITY(FEET/SEC.) =  5.44   DEPTH*VELOCITY(FT*FT/SEC.) =   2.62
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1034.0 FT WITH ELEVATION-DROP =  31.0 FT, IS   21.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  13002.00
  LONGEST FLOWPATH FROM NODE  13000.00 TO NODE  13002.00 =    1119.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  13002.00 TO NODE  13102.00 IS CODE =  41
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
==========================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.82
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    7.22
  LONGEST FLOWPATH FROM NODE  13000.00 TO NODE  13102.00 =    1172.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13102.00 TO NODE  13102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.22
  RAINFALL INTENSITY(INCH/HR) =   4.57
  TOTAL STREAM AREA(ACRES) =     4.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.82

****************************************************************************
  FLOW PROCESS FROM NODE  13100.00 TO NODE  13101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
  UPSTREAM ELEVATION(FEET) =    270.00
  DOWNSTREAM ELEVATION(FEET) =    266.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE  13101.00 TO NODE  13102.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0400
  STREET LENGTH(FEET) =   727.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.90
```

```
  STREET FLOW TRAVEL TIME(MIN.) =   3.38   Tc(MIN.) =    6.63
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.831
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    2.67
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       3.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.02
  FLOW VELOCITY(FEET/SEC.) =  4.01   DEPTH*VELOCITY(FT*FT/SEC.) =   1.15
  LONGEST FLOWPATH FROM NODE  13100.00 TO NODE  13102.00 =     818.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13102.00 TO NODE  13102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.63
  RAINFALL INTENSITY(INCH/HR) =   4.83
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.05

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.82     7.22        4.572          4.87
      2        3.05     6.63        4.831          0.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       19.41     6.63       4.831
      2       20.71     7.22       4.572

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.71   Tc(MIN.) =    7.22
  TOTAL AREA(ACRES) =        5.7
  LONGEST FLOWPATH FROM NODE  13000.00 TO NODE  13102.00 =    1172.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13102.00 TO NODE  13103.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.71
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    7.39
  LONGEST FLOWPATH FROM NODE  13000.00 TO NODE  13103.00 =    1235.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13103.00 TO NODE  13103.00 IS CODE =  10
```

```
------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
========================================================================
                         ********************
                       **ALL MEMORY BANKS ARE FULL.**
                         ********************


 ***WARNING - MEMORY BANK  2 HAS BEEN OVERWRITTEN.

************************************************************************
 FLOW PROCESS FROM NODE  13200.00 TO NODE  13201.00 IS CODE =  21
------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    78.00
 UPSTREAM ELEVATION(FEET) =    270.00
 DOWNSTREAM ELEVATION(FEET) =    268.00
 ELEVATION DIFFERENCE(FEET) =      2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.601
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

************************************************************************
 FLOW PROCESS FROM NODE  13201.00 TO NODE  13202.00 IS CODE =  61
------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
========================================================================
 REPRESENTATIVE SLOPE =  0.0300
 STREET LENGTH(FEET) =  1239.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.72
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.43
   HALFSTREET FLOOD WIDTH(FEET) =   15.05
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.10
 STREET FLOW TRAVEL TIME(MIN.) =   4.20   Tc(MIN.) =    7.80
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.351
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
 SUBAREA AREA(ACRES) =    6.41      SUBAREA RUNOFF(CFS) =   22.04
 TOTAL AREA(ACRES) =        6.5        PEAK FLOW RATE(CFS) =      22.38

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  20.03
 FLOW VELOCITY(FEET/SEC.) =  5.78   DEPTH*VELOCITY(FT*FT/SEC.) =   2.97
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
```

```
        AND L = 1239.0 FT WITH ELEVATION-DROP =  37.2 FT, IS   29.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  13202.00
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13202.00 =    1317.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13202.00 TO NODE  13302.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.38
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    7.94
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13302.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.94
  RAINFALL INTENSITY(INCH/HR) =   4.30
  TOTAL STREAM AREA(ACRES) =     6.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.38

****************************************************************************
  FLOW PROCESS FROM NODE  13300.00 TO NODE  13301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    237.00
  DOWNSTREAM ELEVATION(FEET) =    235.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.485
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0200
  STREET LENGTH(FEET) =   224.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
  STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =    4.72
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.11      SUBAREA RUNOFF(CFS) =    5.08
  TOTAL AREA(ACRES) =        1.2        PEAK FLOW RATE(CFS) =       5.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.05
  FLOW VELOCITY(FEET/SEC.) =  3.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
  LONGEST FLOWPATH FROM NODE  13300.00 TO NODE  13302.00 =     299.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.72
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.54

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       22.38     7.94        4.301          6.51
      2        5.54     4.72        5.796          1.21

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       18.83     4.72       5.796
      2       26.49     7.94       4.301

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.49   Tc(MIN.) =    7.94
  TOTAL AREA(ACRES) =        7.7
  LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13302.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13103.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
```

```
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
 (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
  AT DEPTH = 0.82 * DIAMETER)
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      26.49
 PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    8.26
 LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13103.00 =    1490.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13103.00 TO NODE  13103.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       26.49     8.26       4.193        7.72
 LONGEST FLOWPATH FROM NODE  13200.00 TO NODE  13103.00 =    1490.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       20.71     7.39       4.505        5.67
 LONGEST FLOWPATH FROM NODE  13000.00 TO NODE  13103.00 =    1235.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      44.41       7.39        4.505
    2      45.76       8.26        4.193

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      45.76   Tc(MIN.) =    8.26
 TOTAL AREA(ACRES) =       13.4

****************************************************************************
 FLOW PROCESS FROM NODE  14000.00 TO NODE  14001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
 UPSTREAM ELEVATION(FEET) =    234.00
 DOWNSTREAM ELEVATION(FEET) =    230.00
 ELEVATION DIFFERENCE(FEET) =      4.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE  14001.00 TO NODE  14002.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0500
 STREET LENGTH(FEET) =   399.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
```

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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.39
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =    4.67
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.55      SUBAREA RUNOFF(CFS) =    7.10
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       7.56

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.30
  FLOW VELOCITY(FEET/SEC.) =  5.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
  LONGEST FLOWPATH FROM NODE  14000.00 TO NODE  14002.00 =     490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  14002.00 TO NODE  14102.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.06
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.56
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    4.70
  LONGEST FLOWPATH FROM NODE  14000.00 TO NODE  14102.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  14102.00 TO NODE  14102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.70
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.56

****************************************************************************
  FLOW PROCESS FROM NODE  14100.00 TO NODE  14101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    98.00
  UPSTREAM ELEVATION(FEET) =    224.00
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 DOWNSTREAM ELEVATION(FEET) =    216.00
 ELEVATION DIFFERENCE(FEET) =      8.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.744
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE  14101.00 TO NODE  14102.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0800
 STREET LENGTH(FEET) =    69.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.19
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.20
   HALFSTREET FLOOD WIDTH(FEET) =    3.84
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.49
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.91
 STREET FLOW TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =    3.00
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
 SUBAREA AREA(ACRES) =    0.32      SUBAREA RUNOFF(CFS) =    1.47
 TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       1.92

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   5.31
 FLOW VELOCITY(FEET/SEC.) =  4.80   DEPTH*VELOCITY(FT*FT/SEC.) =   1.12
 LONGEST FLOWPATH FROM NODE  14100.00 TO NODE  14102.00 =     167.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  14102.00 TO NODE  14102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    3.00
 RAINFALL INTENSITY(INCH/HR) =   5.80
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.92

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.56     4.70        5.796          1.65
     2        1.92     3.00        5.796          0.42
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  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        6.75     3.00       5.796
      2        9.48     4.70       5.796

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.48   Tc(MIN.) =    4.70
  TOTAL AREA(ACRES) =        2.1
  LONGEST FLOWPATH FROM NODE  14000.00 TO NODE  14102.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  15000.00 TO NODE  15001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
  UPSTREAM ELEVATION(FEET) =    257.00
  DOWNSTREAM ELEVATION(FEET) =    253.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE  15001.00 TO NODE  15002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0400
  STREET LENGTH(FEET) =  1640.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.60
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.86
  STREET FLOW TRAVEL TIME(MIN.) =   4.48   Tc(MIN.) =    7.72
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.378
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =   10.23      SUBAREA RUNOFF(CFS) =   35.38
  TOTAL AREA(ACRES) =       10.3        PEAK FLOW RATE(CFS) =      35.73
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  25.28
  FLOW VELOCITY(FEET/SEC.) =  7.06   DEPTH*VELOCITY(FT*FT/SEC.) =   4.00
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1640.0 FT WITH ELEVATION-DROP =  65.6 FT, IS   46.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  15002.00
  LONGEST FLOWPATH FROM NODE  15000.00 TO NODE  15002.00 =    1731.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20110.00 TO NODE  20111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    86.00
  UPSTREAM ELEVATION(FEET) =    210.00
  DOWNSTREAM ELEVATION(FEET) =    207.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.412
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE  20111.00 TO NODE  20112.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0400
  STREET LENGTH(FEET) =   416.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =    5.08
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.734
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.39      SUBAREA RUNOFF(CFS) =    6.30
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       6.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.30
  FLOW VELOCITY(FEET/SEC.) =  4.84   DEPTH*VELOCITY(FT*FT/SEC.) =   1.70
  LONGEST FLOWPATH FROM NODE  20110.00 TO NODE  20112.00 =     502.00 FEET.
```

```
**************************************************************************
  FLOW PROCESS FROM NODE  20200.00 TO NODE  20201.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    93.00
  UPSTREAM ELEVATION(FEET) =    254.00
  DOWNSTREAM ELEVATION(FEET) =    250.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.163
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.41
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.41

**************************************************************************
  FLOW PROCESS FROM NODE  20201.00 TO NODE  20202.00 IS CODE =  61
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0500
  STREET LENGTH(FEET) =   860.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.10
  STREET FLOW TRAVEL TIME(MIN.) =   3.42   Tc(MIN.) =    7.58
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.432
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    1.27      SUBAREA RUNOFF(CFS) =    4.00
  TOTAL AREA(ACRES) =       1.4        PEAK FLOW RATE(CFS) =       4.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.92
  FLOW VELOCITY(FEET/SEC.) =  4.71   DEPTH*VELOCITY(FT*FT/SEC.) =   1.44
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20202.00 =     953.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE  20600.00 TO NODE  20601.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
```

```
  UPSTREAM ELEVATION(FEET) =    295.00
  DOWNSTREAM ELEVATION(FEET) =    294.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE  20601.00 TO NODE  20602.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =   702.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   5.03   Tc(MIN.) =    8.33
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.171
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    1.35      SUBAREA RUNOFF(CFS) =    4.62
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       4.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.27
  FLOW VELOCITY(FEET/SEC.) =  2.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.03
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20602.00 =     762.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20602.00 TO NODE  20612.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.51
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.96
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20612.00 =     772.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20612.00 TO NODE  20612.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =     1.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.96

****************************************************************************
  FLOW PROCESS FROM NODE  20610.00 TO NODE  20611.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    299.00
  DOWNSTREAM ELEVATION(FEET) =    298.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE  20611.00 TO NODE  20612.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  STREET LENGTH(FEET) =  1361.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.40
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   7.06   Tc(MIN.) =   10.35
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.625
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    7.05      SUBAREA RUNOFF(CFS) =   20.96
  TOTAL AREA(ACRES) =        7.2        PEAK FLOW RATE(CFS) =      21.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  28.09
  FLOW VELOCITY(FEET/SEC.) =  3.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.17
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1361.0 FT WITH ELEVATION-DROP =  13.6 FT, IS   33.5 CFS,
```

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        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20612.00
  LONGEST FLOWPATH FROM NODE  20610.00 TO NODE  20612.00 =    1421.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20612.00 TO NODE  20612.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.35
  RAINFALL INTENSITY(INCH/HR) =   3.63
  TOTAL STREAM AREA(ACRES) =     7.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.96     8.36        4.162          1.45
      2       21.25    10.35        3.625          7.15

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       22.12     8.36       4.162
      2       25.57    10.35       3.625

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.57   Tc(MIN.) =   10.35
  TOTAL AREA(ACRES) =        8.6
  LONGEST FLOWPATH FROM NODE  20610.00 TO NODE  20612.00 =    1421.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20612.00 TO NODE  20622.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.57
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   10.57
  LONGEST FLOWPATH FROM NODE  20610.00 TO NODE  20622.00 =    1501.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20622.00 TO NODE  20622.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.57
  RAINFALL INTENSITY(INCH/HR) =   3.58
  TOTAL STREAM AREA(ACRES) =     8.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.57

****************************************************************************
```

```
 FLOW PROCESS FROM NODE  20620.00 TO NODE  20621.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
 UPSTREAM ELEVATION(FEET) =    294.00
 DOWNSTREAM ELEVATION(FEET) =    293.00
 ELEVATION DIFFERENCE(FEET) =      1.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE  20621.00 TO NODE  20622.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0100
 STREET LENGTH(FEET) =  1082.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.62
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.36
   HALFSTREET FLOOD WIDTH(FEET) =   11.71
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.43
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.88
 STREET FLOW TRAVEL TIME(MIN.) =   7.42   Tc(MIN.) =   10.71
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.546
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
 SUBAREA AREA(ACRES) =    2.07      SUBAREA RUNOFF(CFS) =    6.02
 TOTAL AREA(ACRES) =       2.2        PEAK FLOW RATE(CFS) =       6.31

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.67
 FLOW VELOCITY(FEET/SEC.) =  2.78   DEPTH*VELOCITY(FT*FT/SEC.) =   1.17
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20622.00 =    1142.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20622.00 TO NODE  20622.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.71
 RAINFALL INTENSITY(INCH/HR) =   3.55
```

```
  TOTAL STREAM AREA(ACRES) =     2.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       25.57    10.57        3.578          8.60
      2        6.31    10.71        3.546          2.17

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       31.80    10.57       3.578
      2       31.66    10.71       3.546

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      31.80   Tc(MIN.) =   10.57
  TOTAL AREA(ACRES) =       10.8
  LONGEST FLOWPATH FROM NODE  20610.00 TO NODE  20622.00 =    1501.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20622.00 TO NODE  20632.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.25
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
   AT DEPTH = 0.82 * DIAMETER)
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.80
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   10.59
  LONGEST FLOWPATH FROM NODE  20610.00 TO NODE  20632.00 =    1511.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20632.00 TO NODE  20632.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  20632.00 TO NODE  20632.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  20630.00 TO NODE  20631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    296.00
  DOWNSTREAM ELEVATION(FEET) =    295.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.293
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
```

```
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE  20631.00 TO NODE  20632.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0100
 STREET LENGTH(FEET) =  1338.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.64
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.47
   HALFSTREET FLOOD WIDTH(FEET) =   17.30
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.10
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
 STREET FLOW TRAVEL TIME(MIN.) =   7.19   Tc(MIN.) =   10.48
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.595
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  95
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
 SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =   17.60
 TOTAL AREA(ACRES) =        6.1        PEAK FLOW RATE(CFS) =      17.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  25.28
 FLOW VELOCITY(FEET/SEC.) =  3.54   DEPTH*VELOCITY(FT*FT/SEC.) =   2.00
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1338.0 FT WITH ELEVATION-DROP =  13.4 FT, IS   28.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20632.00
 LONGEST FLOWPATH FROM NODE  20630.00 TO NODE  20632.00 =    1398.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20632.00 TO NODE  20632.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       17.90    10.48       3.595        6.07
 LONGEST FLOWPATH FROM NODE  20630.00 TO NODE  20632.00 =    1398.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       31.80    10.59       3.572       10.77
 LONGEST FLOWPATH FROM NODE  20610.00 TO NODE  20632.00 =    1511.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
```

```
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      49.37      10.48        3.595
      2      49.58      10.59        3.572

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      49.58   Tc(MIN.) =   10.59
  TOTAL AREA(ACRES) =       16.8

****************************************************************************
  FLOW PROCESS FROM NODE  21000.00 TO NODE  21001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    275.00
  DOWNSTREAM ELEVATION(FEET) =    274.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.897
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.46
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
  FLOW PROCESS FROM NODE  21001.00 TO NODE  21002.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0200
  STREET LENGTH(FEET) =   366.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =    5.85
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.239
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.34      SUBAREA RUNOFF(CFS) =    5.55
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.42
  FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21002.00 =     431.00 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE  21400.00 TO NODE  21401.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.00
 UPSTREAM ELEVATION(FEET) =    234.00
 DOWNSTREAM ELEVATION(FEET) =    230.00
 ELEVATION DIFFERENCE(FEET) =      4.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.250
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE  21401.00 TO NODE  21402.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0500
 STREET LENGTH(FEET) =   399.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

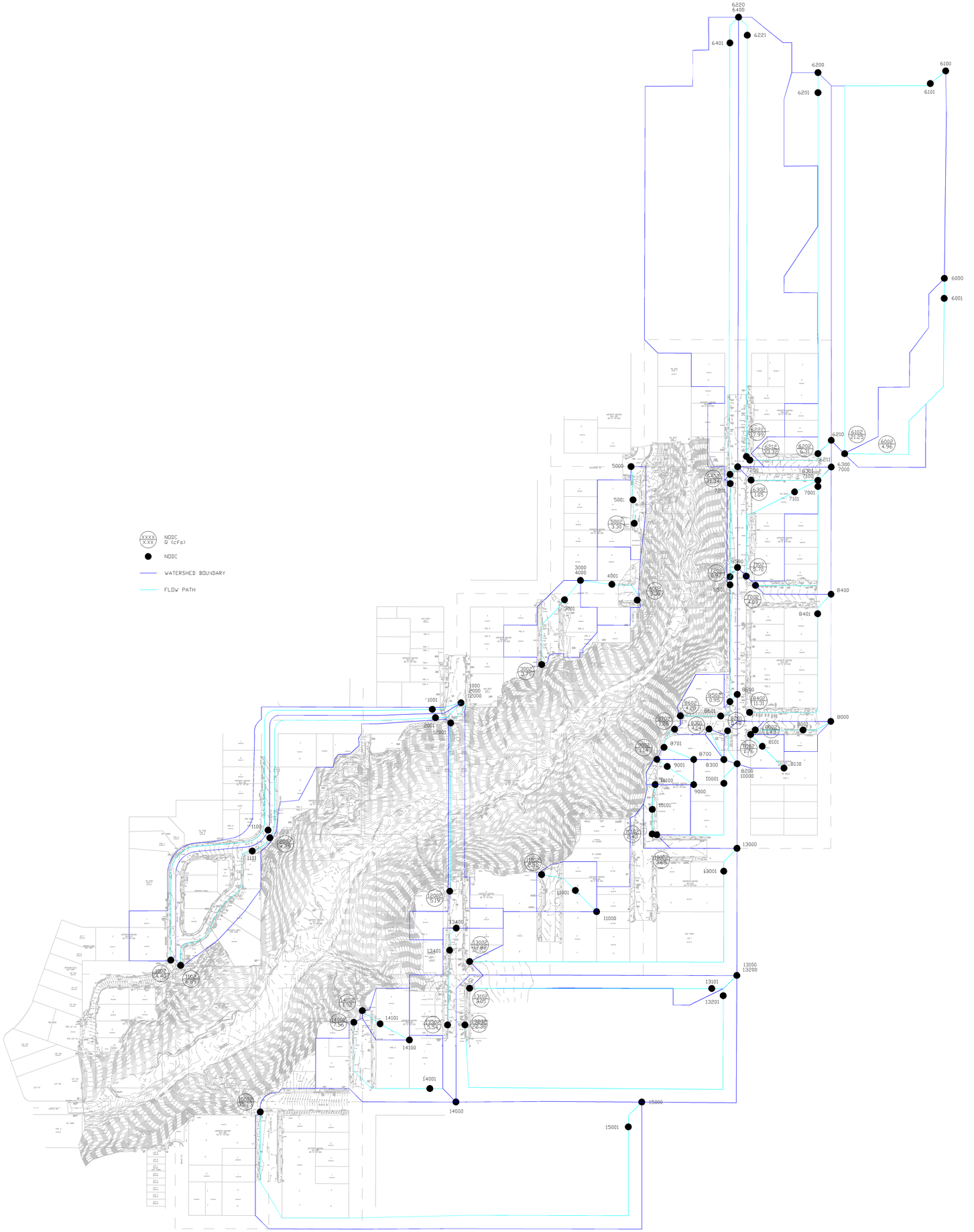
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.99
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =    9.50
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.89
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.55
 STREET FLOW TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =    4.61
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  94
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
 SUBAREA AREA(ACRES) =    1.98      SUBAREA RUNOFF(CFS) =    9.07
 TOTAL AREA(ACRES) =       2.1        PEAK FLOW RATE(CFS) =       9.52

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.52
 FLOW VELOCITY(FEET/SEC.) =  5.65   DEPTH*VELOCITY(FT*FT/SEC.) =   2.13
 LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21402.00 =     490.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        2.1  TC(MIN.) =      4.61
 PEAK FLOW RATE(CFS)   =       9.52
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

♀

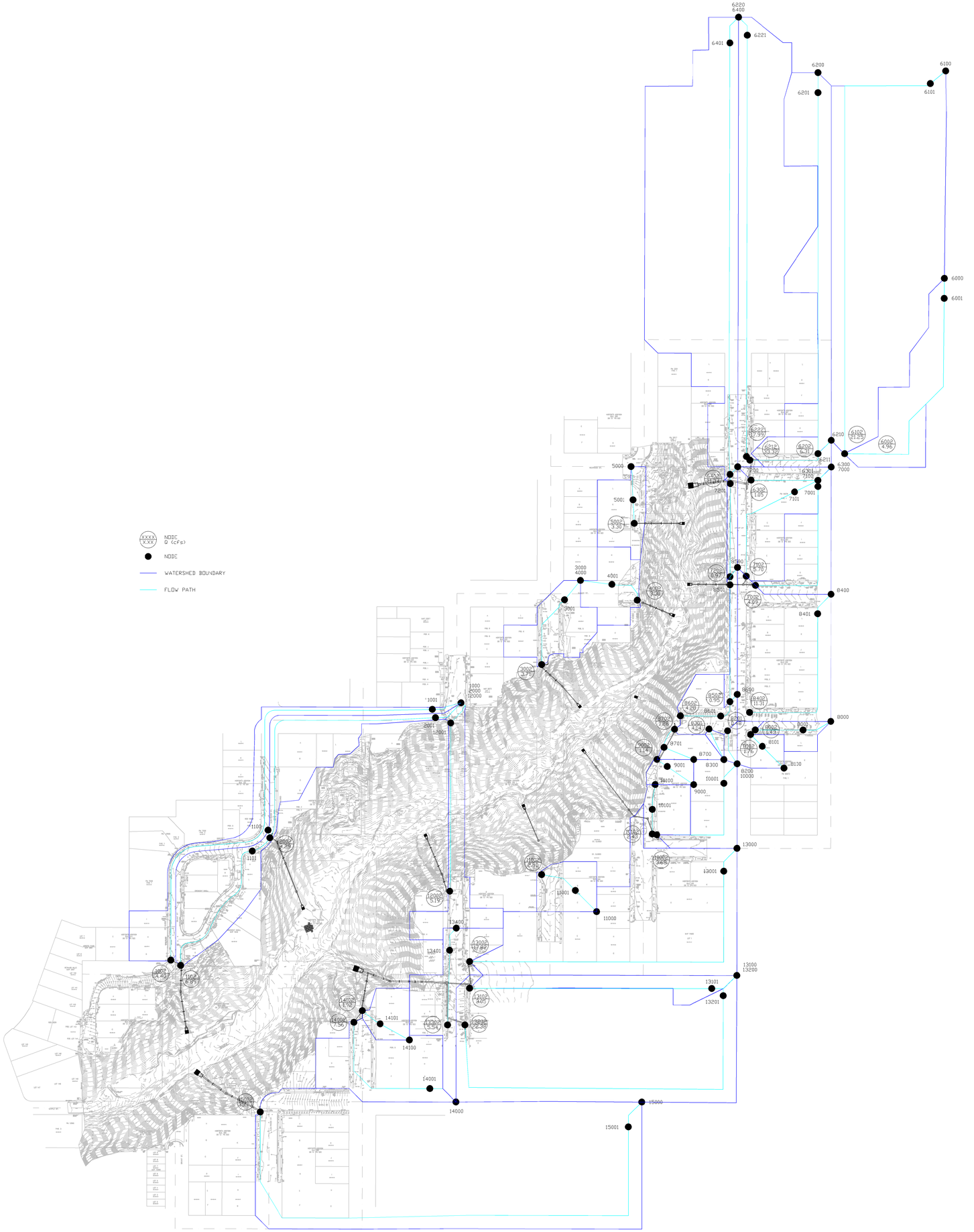
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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE
EXISTING CONDITIONS EXHIBIT

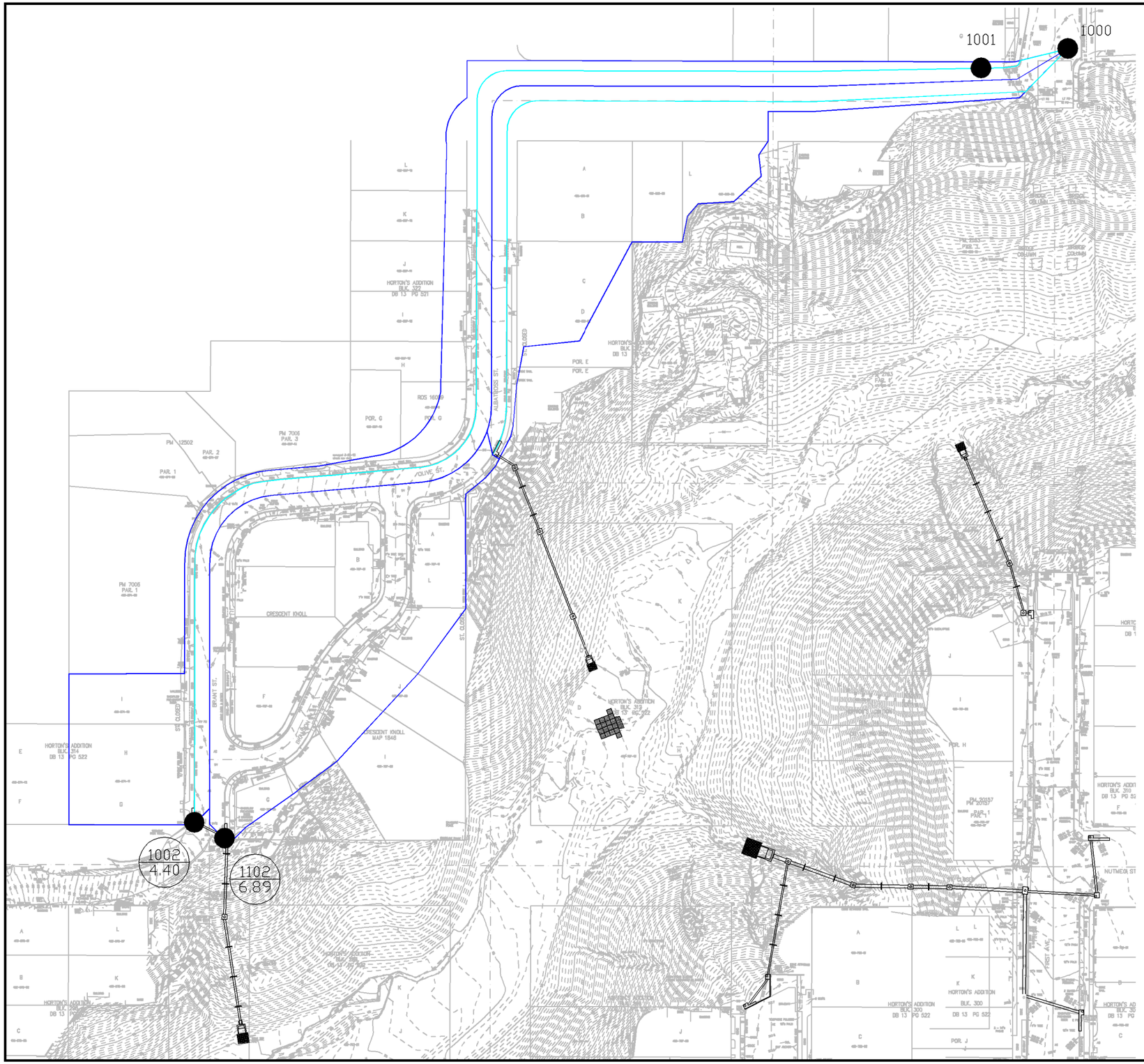
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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE
PROPOSED CONDITIONS EXHIBIT

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X.XX — NODE
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WATERSHED BOUNDARY

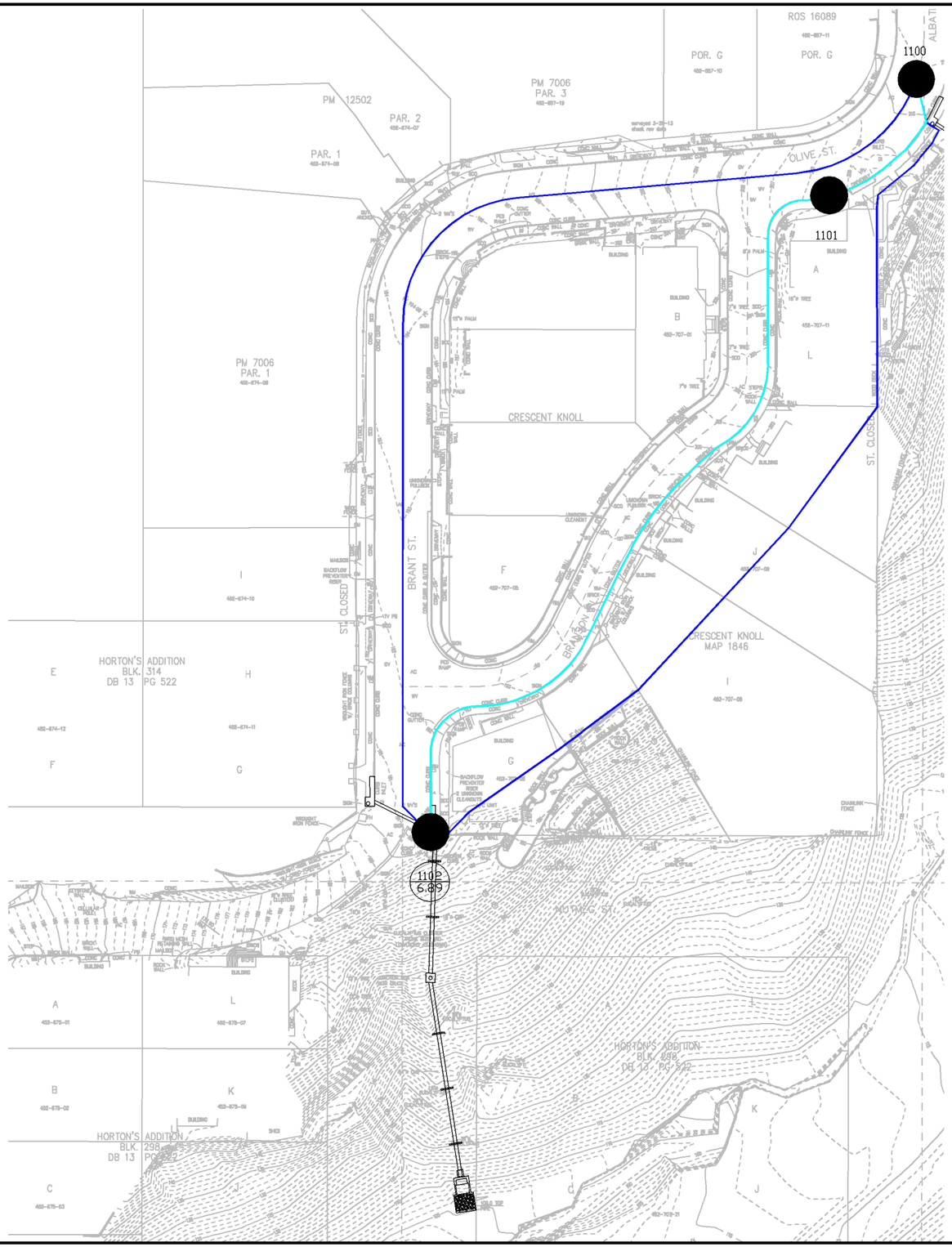
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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 01A



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X.XX — NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

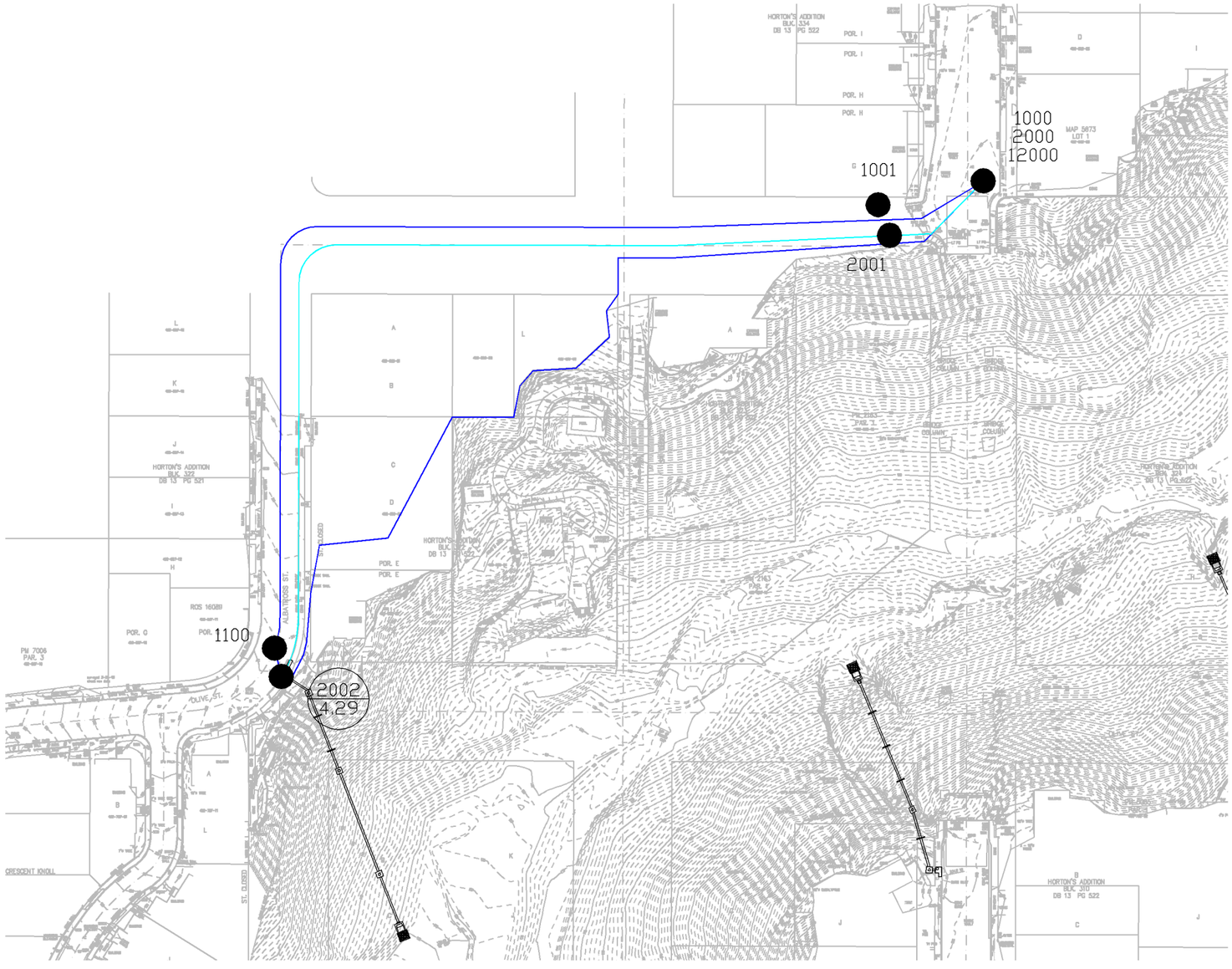
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 01B



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Q (cfs)

NODE

WATERSHED BOUNDARY

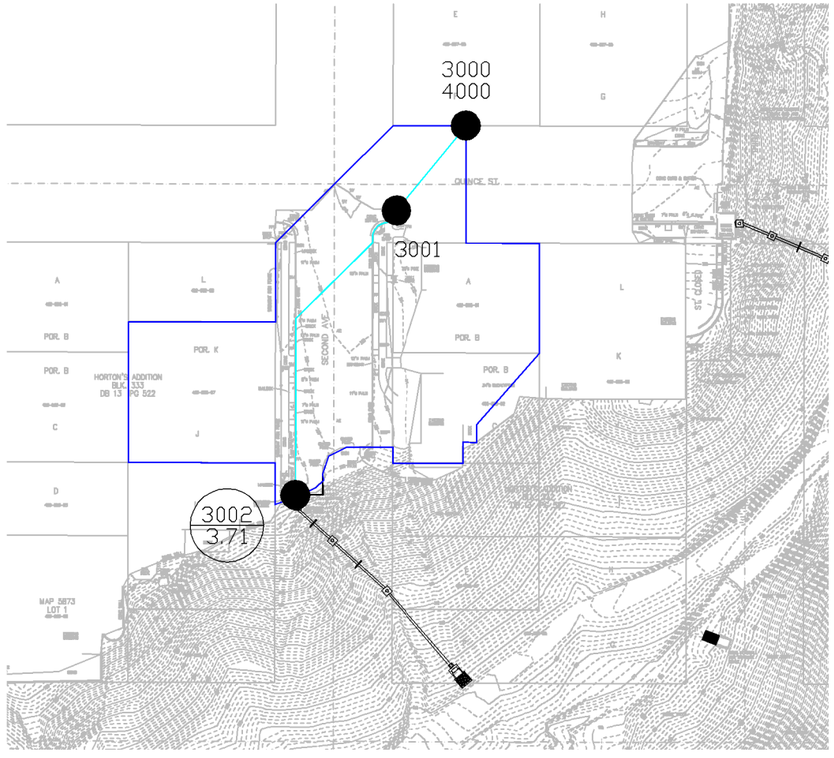
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 02A



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Q (cfs)

NODE

WATERSHED BOUNDARY

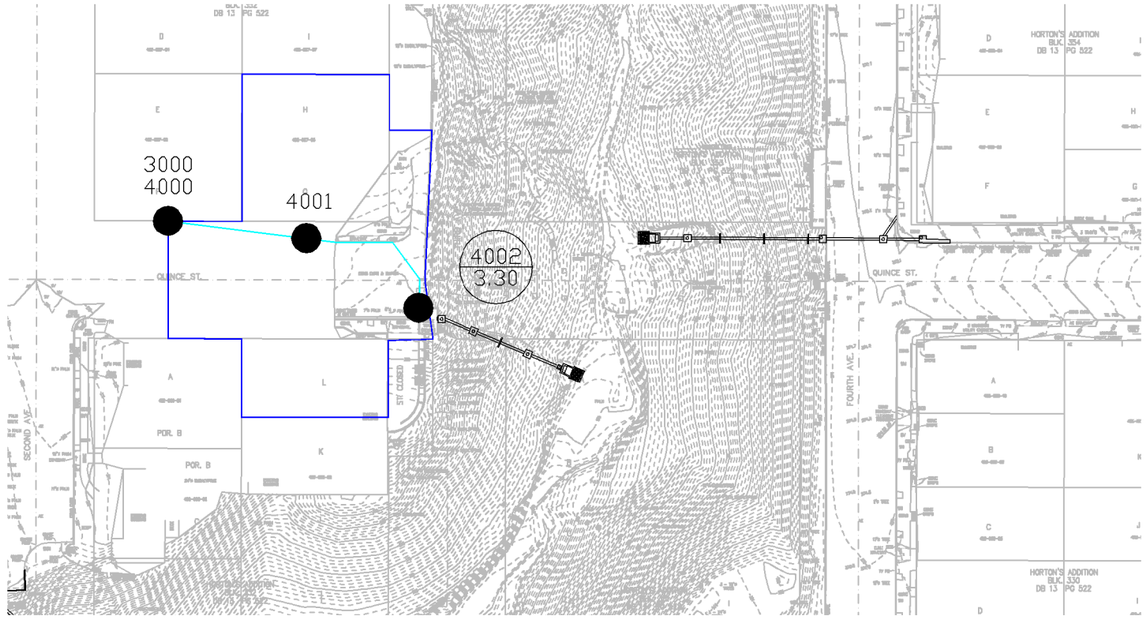
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 03A



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NODE

WATERSHED BOUNDARY

FLOW PATH

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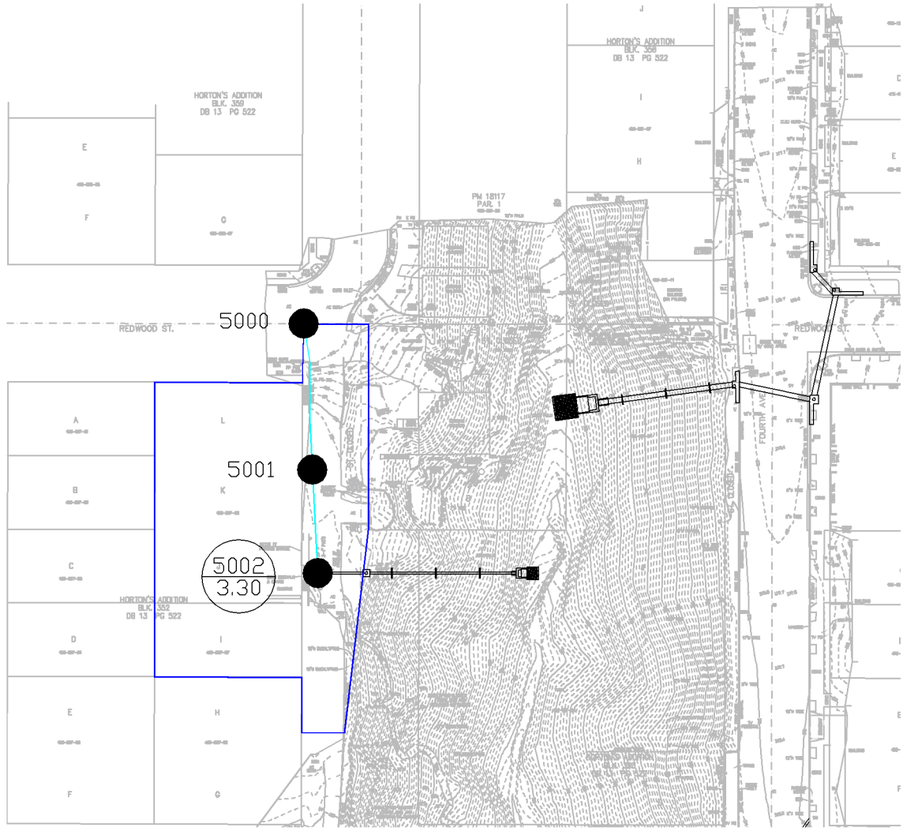
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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 04



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X.XX — NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

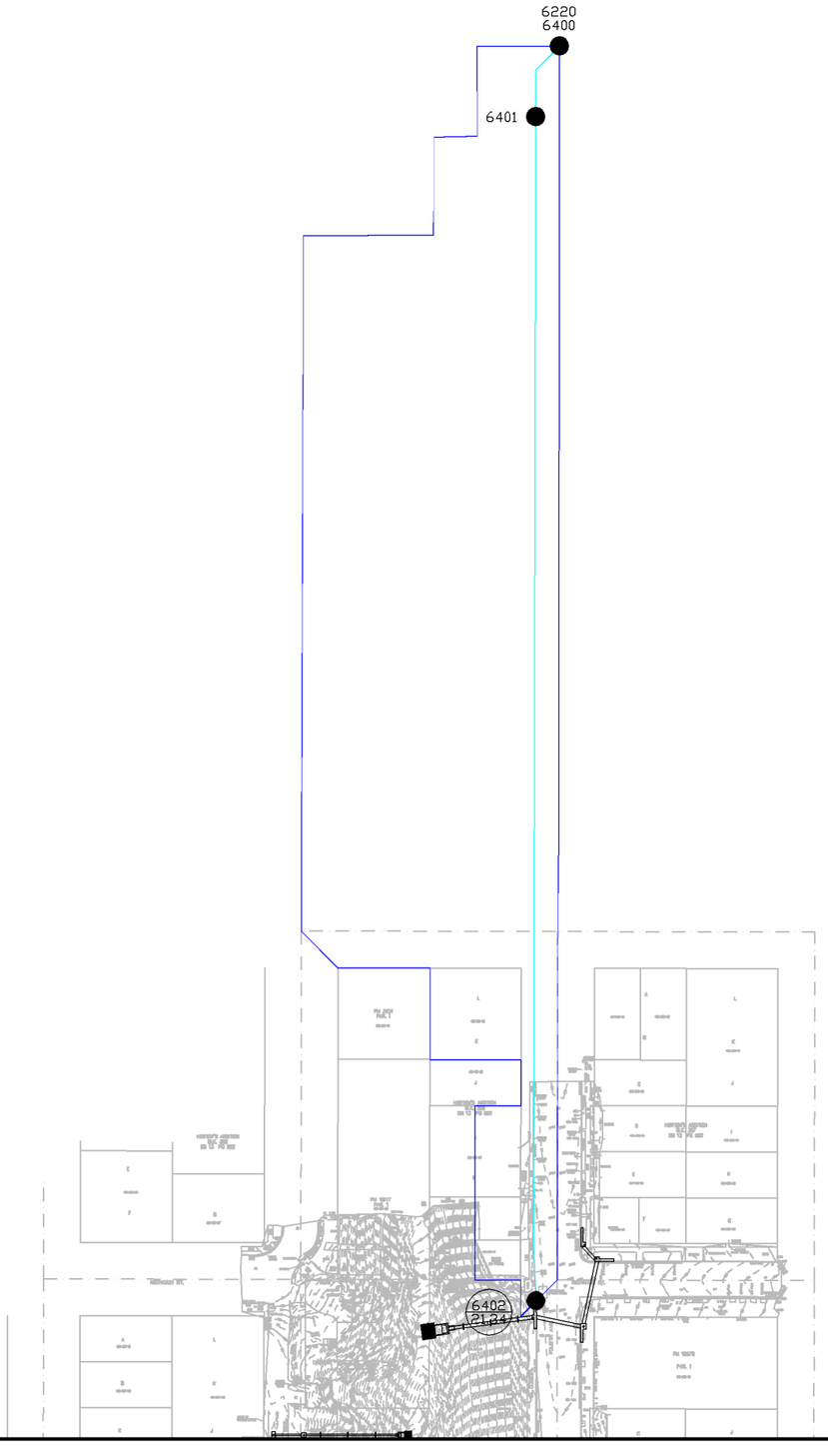
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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 05



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X.XX
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Q (cfs)

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WATERSHED BOUNDARY

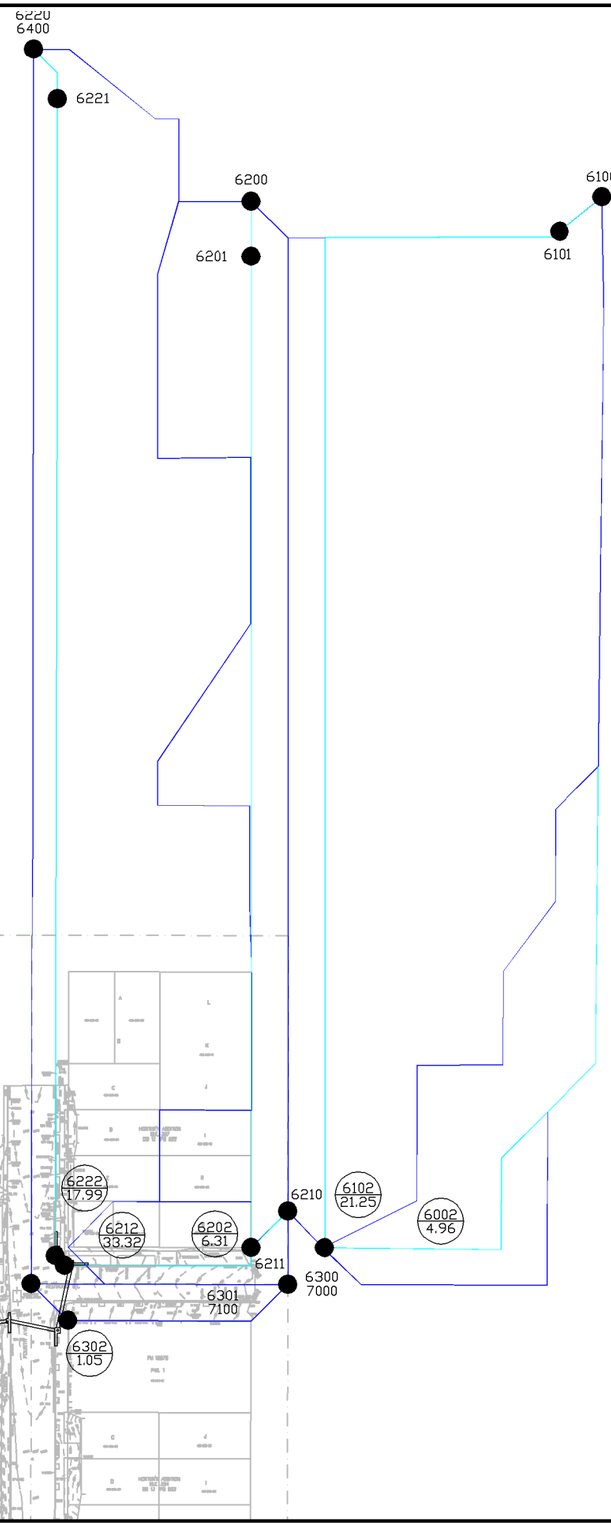
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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 06A



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NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 06B



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X.XX — NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

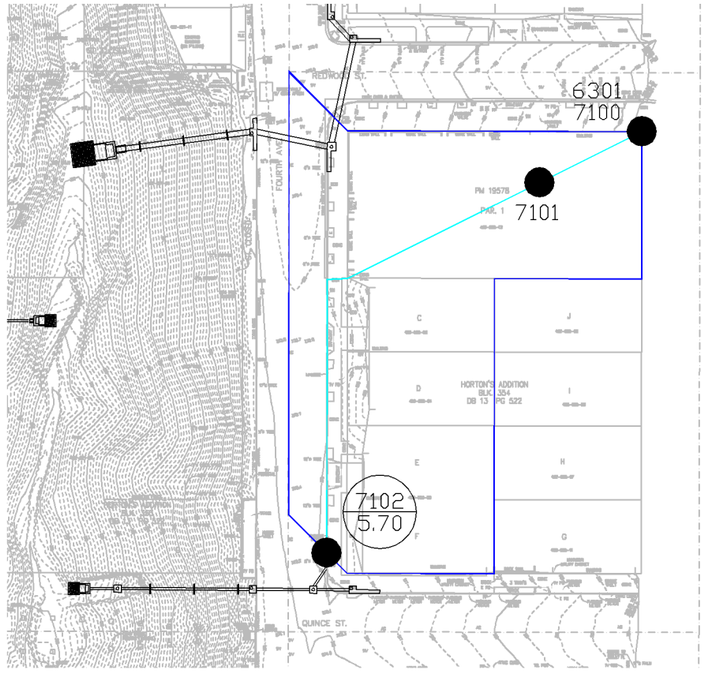
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 07A



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X.XX NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

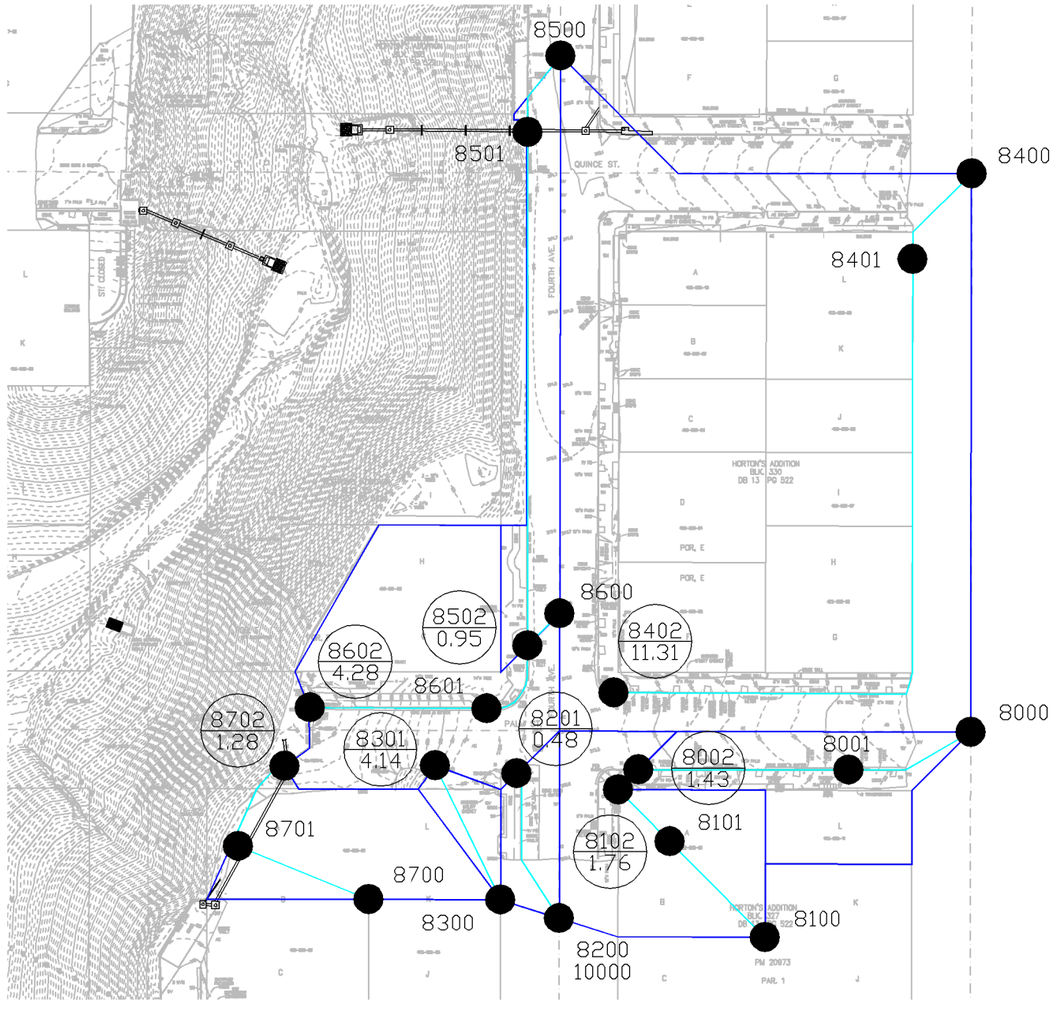
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 07B



XXXX
X.XX — NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

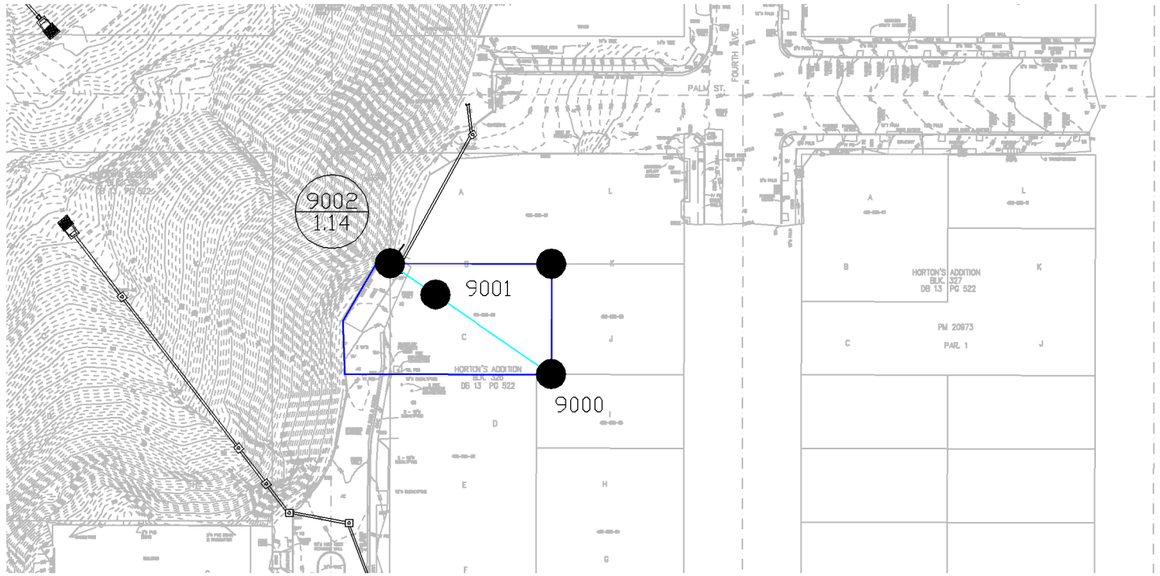
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 08



XXXX / X.XX — NODE Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

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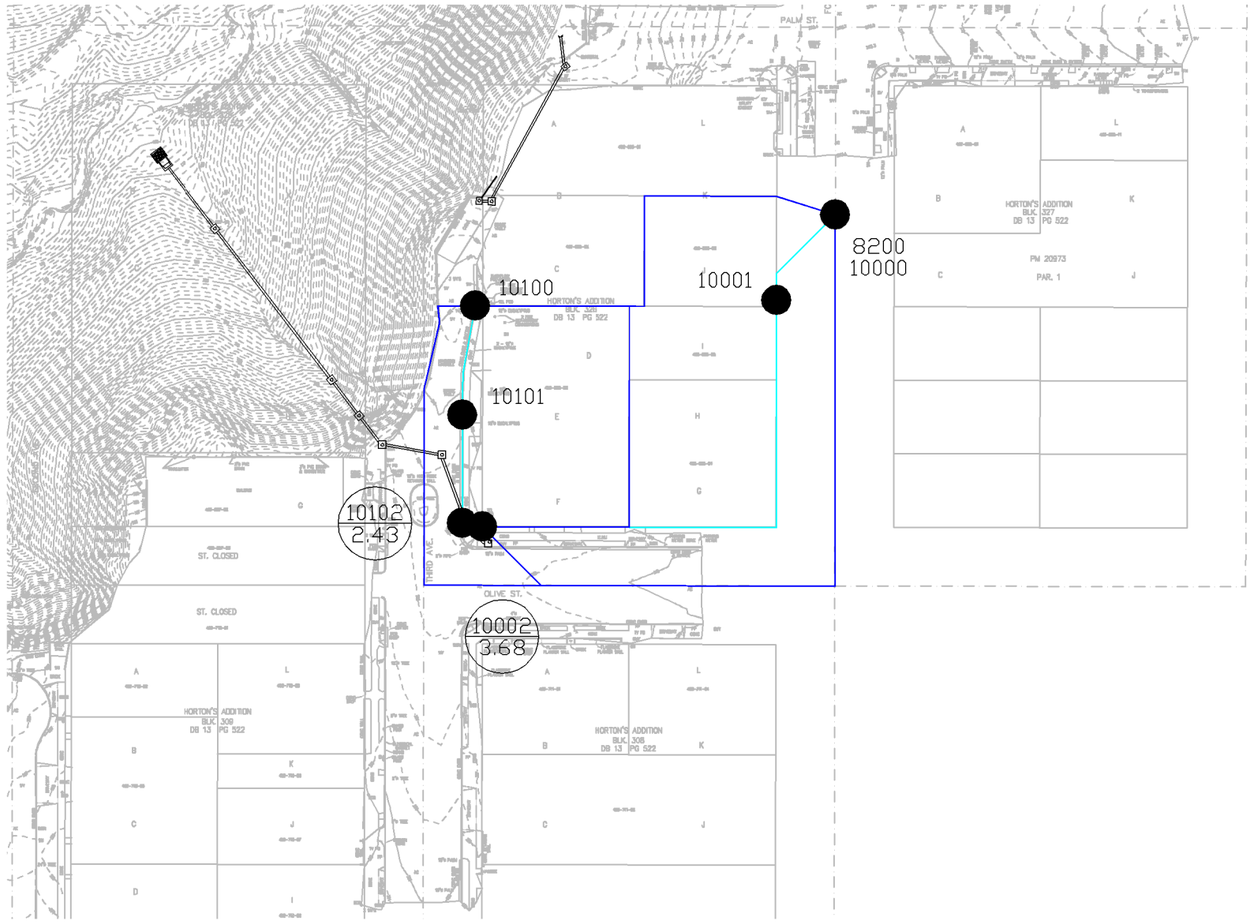
W E

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PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 09



XXXX
X.XX NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

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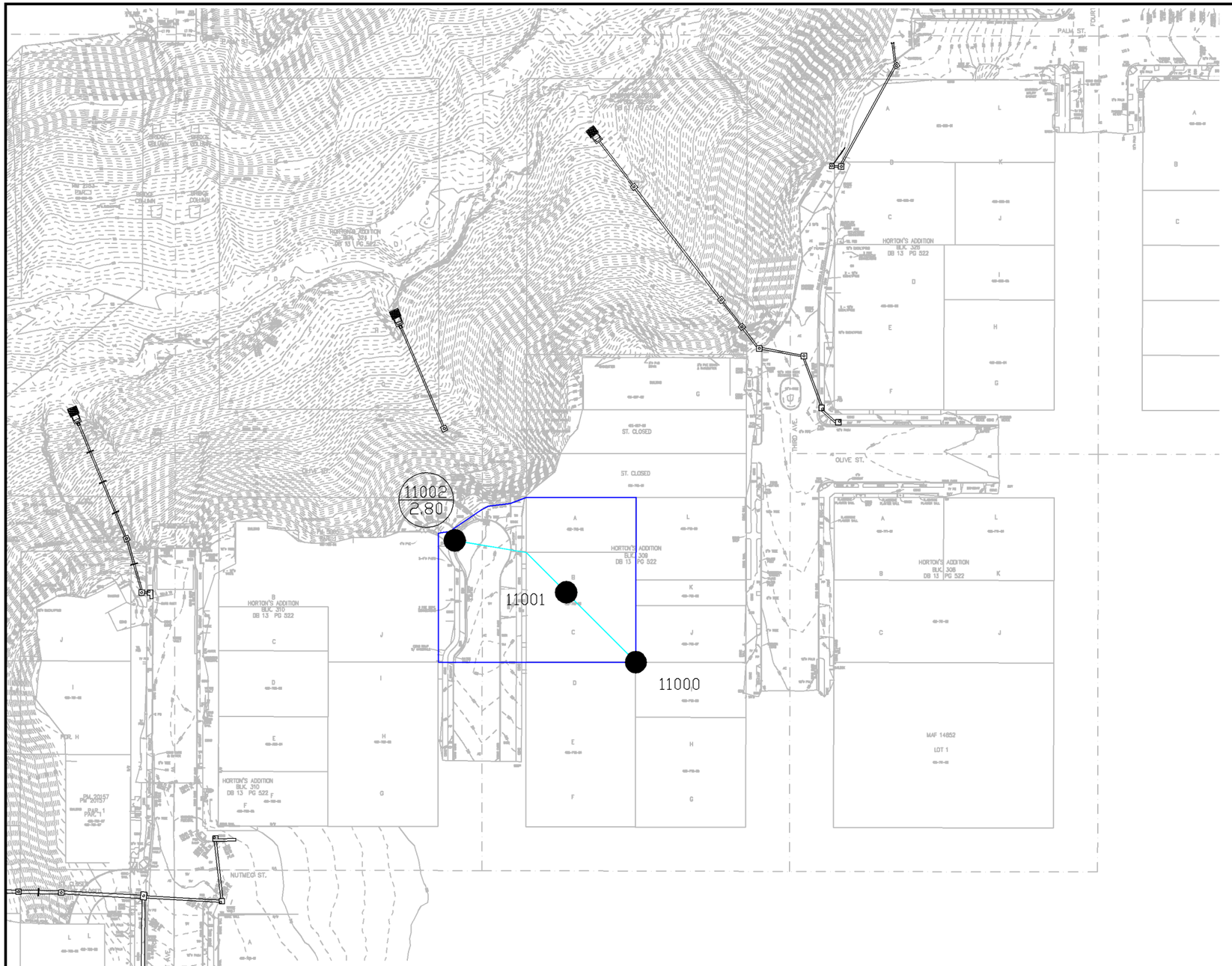
W E

S

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 10



XXXX
X.XX — NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

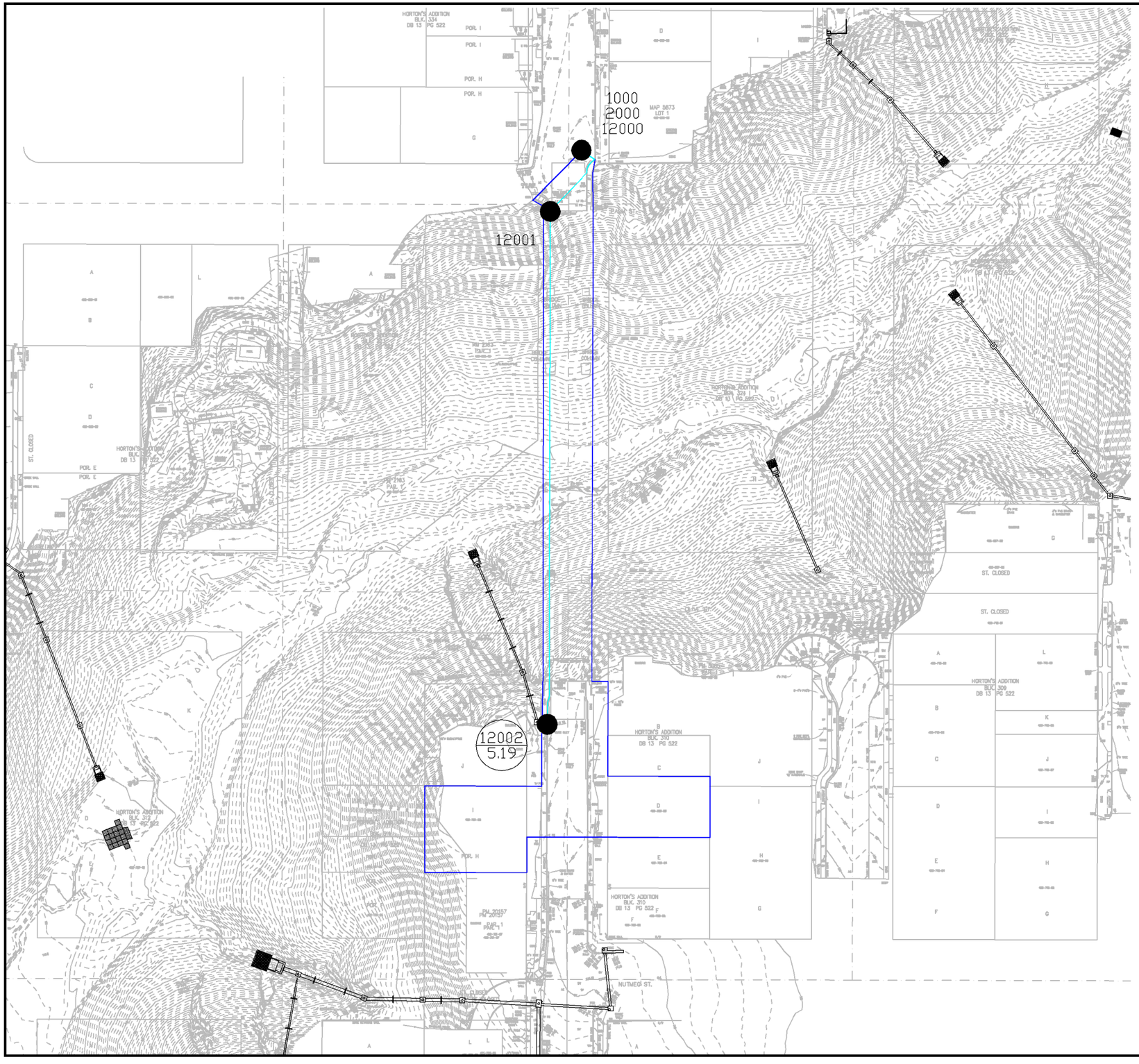
FLOW PATH

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PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

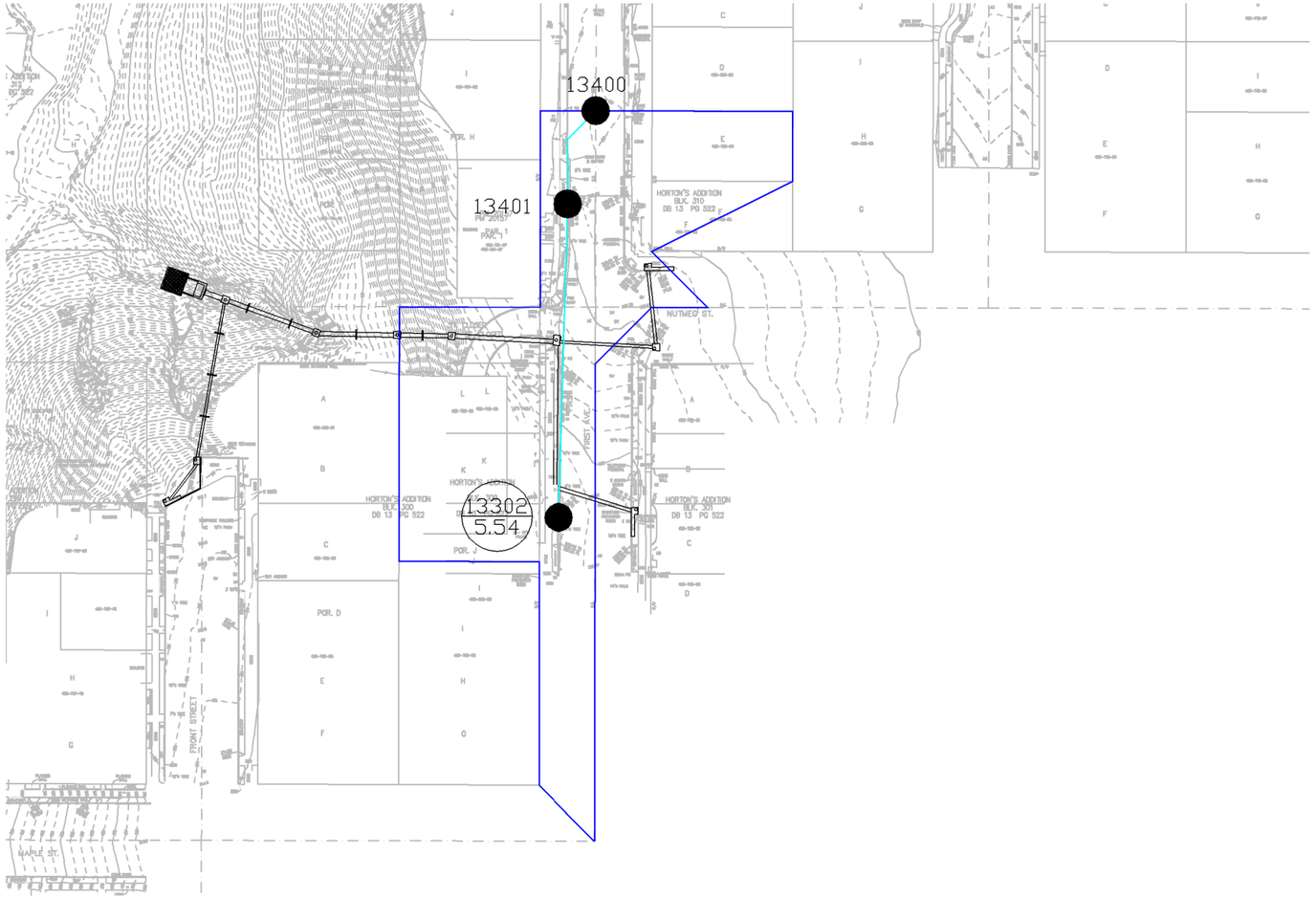
SYSTEM 11



PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 12



XXXX / X.XX — NODE, Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

N

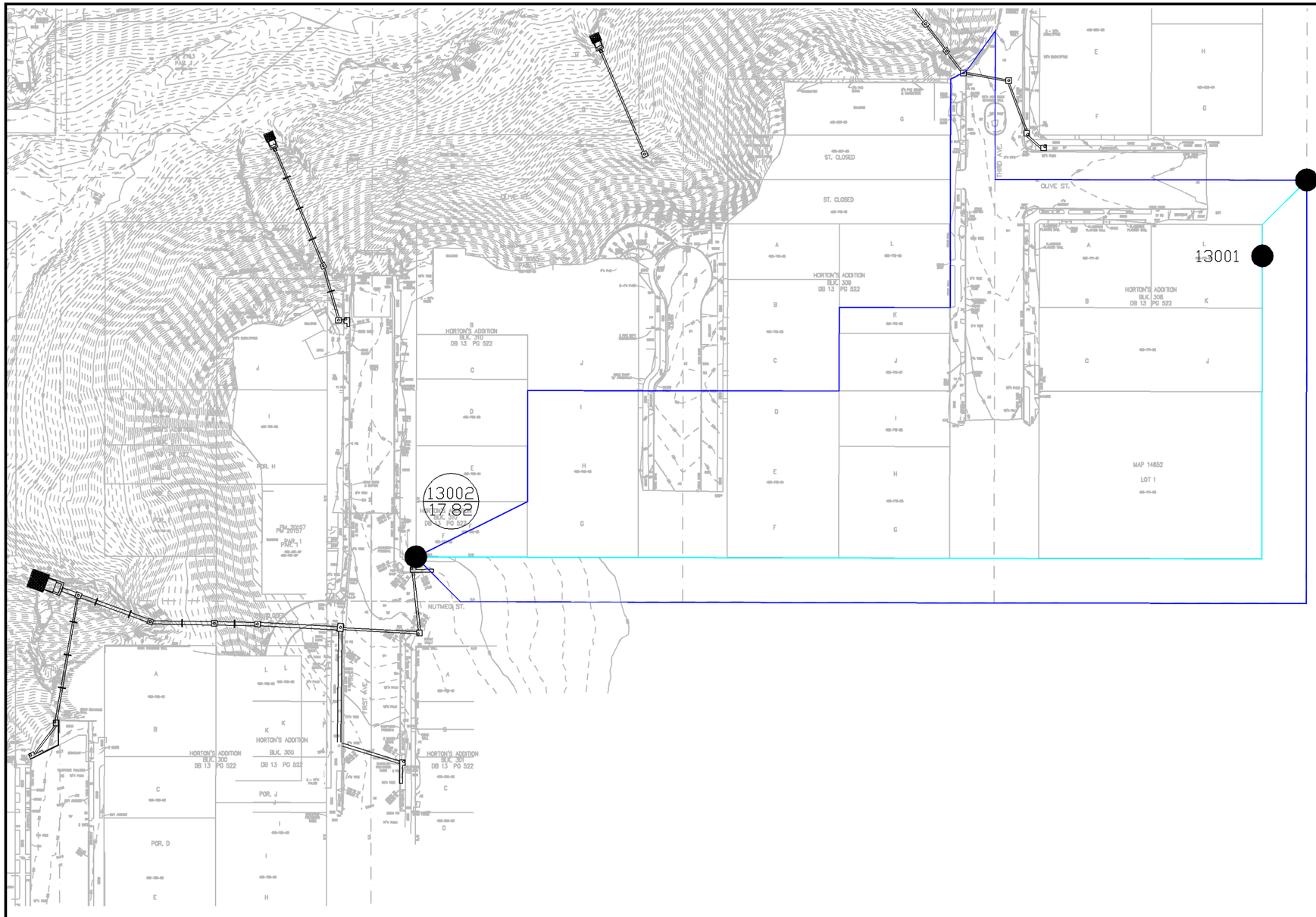
W E

S

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 13A



XXXX
X.XX NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

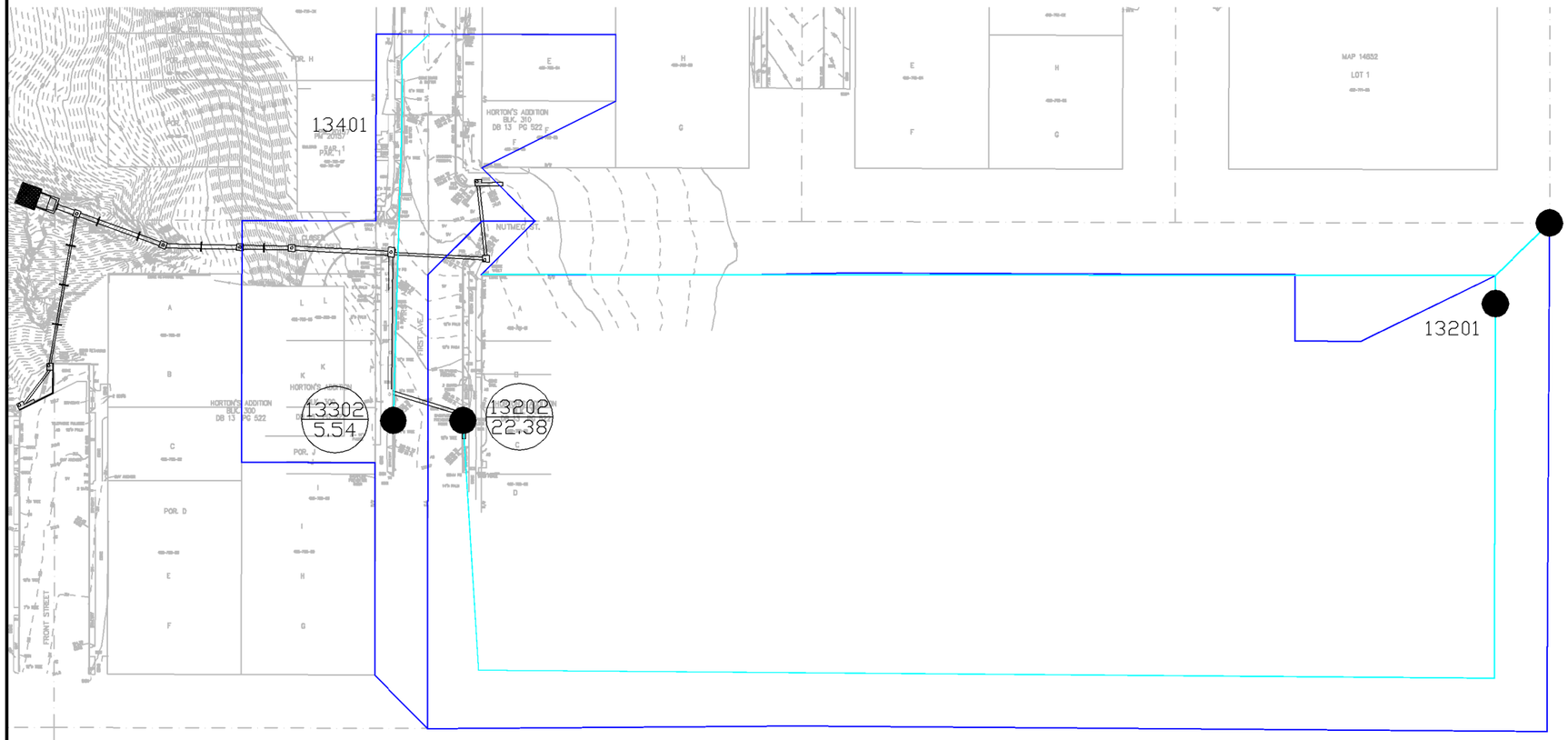
FLOW PATH

N
W E
S

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 13B



XXXX / X.XX — NODE Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

N

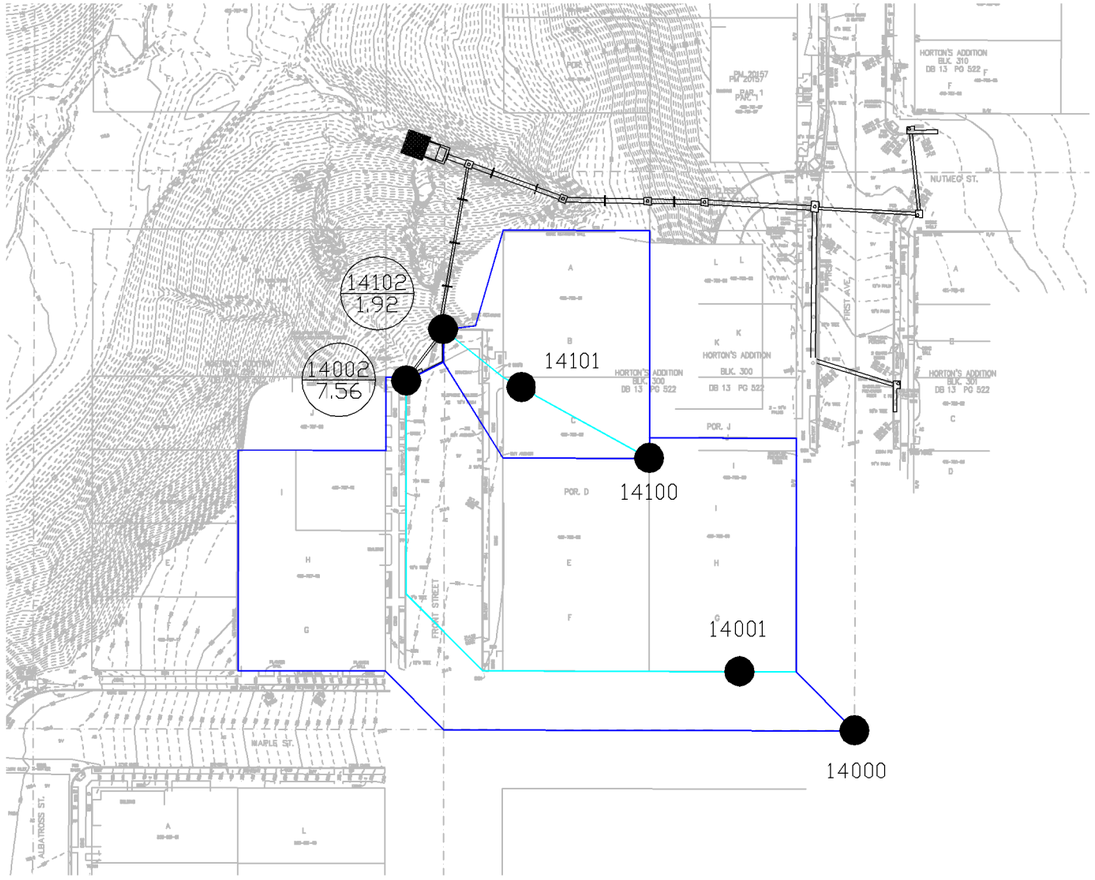
W E

S

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 13C



XXXX / X.XX — NODE Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

N

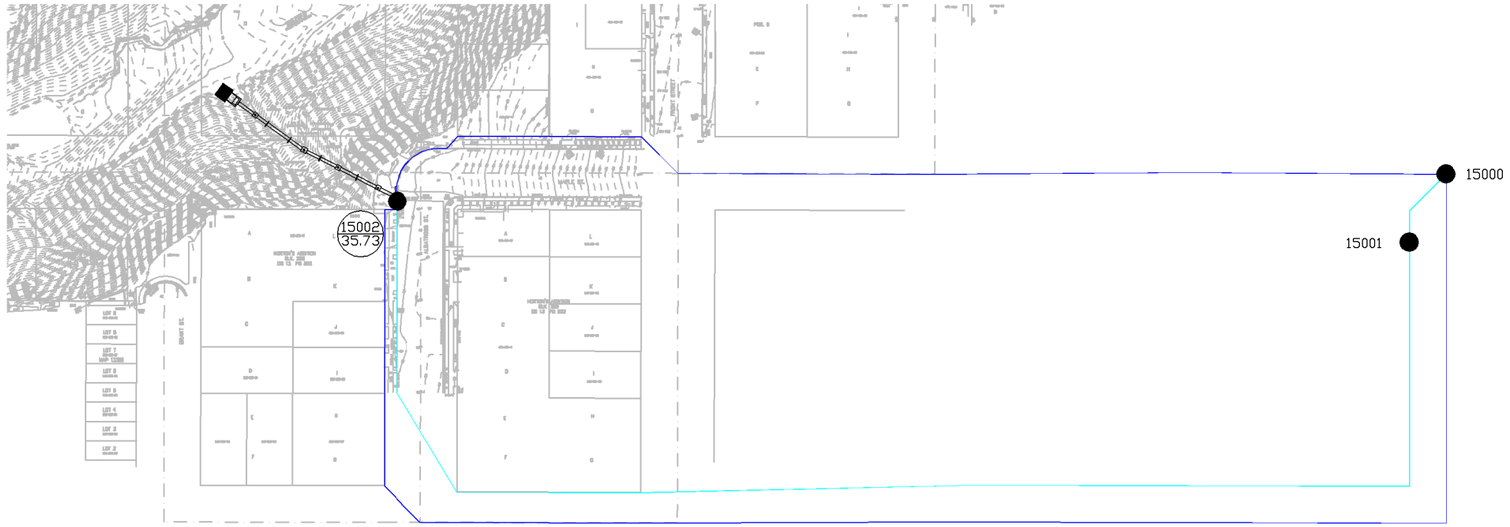
W E

S

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 14



XXXX
X.XX NODE
Q (cfs)

NODE

WATERSHED BOUNDARY

FLOW PATH

N
W E
S

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT

WATERSHED / NODE / BASIN EXHIBIT

SYSTEM 15

APPENDIX C

HYDRAULIC CALCULATIONS

- FlowMaster Output Reports for Existing and Proposed Systems
- WSPGW Output Reports for Proposed Systems

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SYSTEM 1
(BRANT & BARNSON)

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Worksheet for 1A Existing

Project Description

Solve For	Efficiency

Input Data

Discharge		4.40	ft³/s
Slope		2.79	%
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%
Curb Opening Length		15.00	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	4.40	ft³/s
Bypass Flow	0.00	ft³/s
Spread	9.39	ft
Depth	3.27	in
Flow Area	0.97	ft²
Gutter Depression	1.02	in
Total Depression	5.02	in
Velocity	4.55	ft/s
Splash Over Velocity	8.15	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.04	
Grate Flow Ratio	0.57	
Equivalent Cross Slope	0.1390	ft/ft
Active Grate Length	2.01	ft
Length Factor	0.84	
Total Interception Length	15.51	ft

Worksheet for 1A Existing

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for 1B Existing

Project Description

Solve For	Spread

Input Data

Discharge		6.75	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		15.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread	11.55	ft
Depth	3.79	in
Gutter Depression	1.02	in
Total Depression	5.02	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

Worksheet for 1A Upgrade

Project Description

Solve For	Efficiency

Input Data

Discharge	4.40	ft³/s
Slope	2.79	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	15.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	100.00	%
Intercepted Flow	4.40	ft³/s
Bypass Flow	0.00	ft³/s
Spread	9.50	ft
Depth	3.42	in
Flow Area	0.97	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	4.52	ft/s
Equivalent Cross Slope	0.1536	ft/ft
Length Factor	1.03	
Total Interception Length	14.61	ft

Worksheet for 1B Upgrade and Revised Q

Project Description

Solve For	Spread

Input Data

Discharge		6.89	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		15.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread	11.72	ft
Depth	3.83	in
Gutter Depression	1.02	in
Total Depression	5.02	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

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Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10037.260	106.800	.396	107.196	11.29	25.65	10.21	117.41	.00	1.21	1.59	2.000	.000	.00	1 .0
1.617	.0113					.3528	.57	.40	8.60	.96	.013	.00	.00	PIPE
10038.880	106.818	.388	107.206	11.29	26.33	10.76	117.97	.00	1.21	1.58	2.000	.000	.00	1 .0
2.793	.0113					.3923	1.10	.39	8.91	.96	.013	.00	.00	PIPE
10041.670	106.850	.376	107.226	11.29	27.61	11.84	119.06	.00	1.21	1.56	2.000	.000	.00	1 .0
19.577	.4187					.4167	8.16	.38	9.51	.38	.013	.00	.00	PIPE
10061.250	115.048	.376	115.424	11.29	27.52	11.76	127.19	.00	1.21	1.56	2.000	.000	.00	1 .0
34.895	.4187					.3885	13.56	.38	9.47	.38	.013	.00	.00	PIPE
10096.140	129.660	.389	130.049	11.29	26.24	10.69	140.74	.00	1.21	1.58	2.000	.000	.00	1 .0
12.097	.4187					.3395	4.11	.39	8.87	.38	.013	.00	.00	PIPE
10108.240	134.726	.402	135.128	11.29	25.02	9.72	144.85	.00	1.21	1.60	2.000	.000	.00	1 .0
7.124	.4187					.2967	2.11	.40	8.31	.38	.013	.00	.00	PIPE
10115.360	137.709	.416	138.125	11.29	23.86	8.84	146.96	.00	1.21	1.62	2.000	.000	.00	1 .0
4.951	.4187					.2593	1.28	.42	7.79	.38	.013	.00	.00	PIPE
10120.320	139.782	.430	140.212	11.29	22.75	8.03	148.25	.00	1.21	1.64	2.000	.000	.00	1 .0
3.727	.4187					.2265	.84	.43	7.29	.38	.013	.00	.00	PIPE
10124.040	141.342	.444	141.786	11.29	21.69	7.30	149.09	.00	1.21	1.66	2.000	.000	.00	1 .0
2.936	.4187					.1980	.58	.44	6.83	.38	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10126.980	142.571	.460	143.032	11.29	20.68	6.64	149.67	.00	1.21	1.68	2.000	.000	.00	1 .0
2.396	.4187				.1732	.41	.46	6.40	.38	.013	.00	.00		PIPE
10129.370	143.575	.475	144.050	11.29	19.72	6.04	150.09	.00	1.21	1.70	2.000	.000	.00	1 .0
1.988	.4187				.1514	.30	.48	5.99	.38	.013	.00	.00		PIPE
10131.360	144.408	.492	144.900	11.29	18.80	5.49	150.39	.00	1.21	1.72	2.000	.000	.00	1 .0
1.683	.4187				.1325	.22	.49	5.61	.38	.013	.00	.00		PIPE
10133.040	145.112	.509	145.621	11.29	17.92	4.99	150.61	.00	1.21	1.74	2.000	.000	.00	1 .0
1.440	.4187				.1158	.17	.51	5.25	.38	.013	.00	.00		PIPE
10134.490	145.716	.526	146.242	11.29	17.09	4.53	150.78	.00	1.21	1.76	2.000	.000	.00	1 .0
1.242	.4187				.1013	.13	.53	4.92	.38	.013	.00	.00		PIPE
10135.730	146.236	.544	146.780	11.29	16.29	4.12	150.90	.00	1.21	1.78	2.000	.000	.00	1 .0
1.077	.4187				.0886	.10	.54	4.60	.38	.013	.00	.00		PIPE
10136.800	146.687	.563	147.250	11.29	15.54	3.75	151.00	.00	1.21	1.80	2.000	.000	.00	1 .0
.939	.4187				.0776	.07	.56	4.31	.38	.013	.00	.00		PIPE
10137.740	147.081	.583	147.664	11.29	14.81	3.41	151.07	.00	1.21	1.82	2.000	.000	.00	1 .0
.826	.4187				.0679	.06	.58	4.03	.38	.013	.00	.00		PIPE
10138.570	147.426	.603	148.029	11.29	14.12	3.10	151.13	.00	1.21	1.84	2.000	.000	.00	1 .0
.726	.4187				.0594	.04	.60	3.77	.38	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10139.300	147.730	.624	148.354	11.29	13.47	2.82	151.17	.00	1.21	1.85	2.000	.000	.00	1 .0
.638	.4187					.0520	.03	.62	3.53	.38	.013	.00	.00	PIPE
10139.930	147.997	.646	148.643	11.29	12.84	2.56	151.20	.00	1.21	1.87	2.000	.000	.00	1 .0
.562	.4187					.0456	.03	.65	3.30	.38	.013	.00	.00	PIPE
10140.500	148.232	.669	148.902	11.29	12.24	2.33	151.23	.00	1.21	1.89	2.000	.000	.00	1 .0
.495	.4187					.0400	.02	.67	3.09	.38	.013	.00	.00	PIPE
10140.990	148.440	.693	149.133	11.29	11.67	2.12	151.25	.00	1.21	1.90	2.000	.000	.00	1 .0
.436	.4187					.0350	.02	.69	2.89	.38	.013	.00	.00	PIPE
10141.430	148.622	.718	149.340	11.29	11.13	1.92	151.26	.00	1.21	1.92	2.000	.000	.00	1 .0
.386	.4187					.0307	.01	.72	2.70	.38	.013	.00	.00	PIPE
10141.810	148.784	.743	149.527	11.29	10.61	1.75	151.28	.00	1.21	1.93	2.000	.000	.00	1 .0
.337	.4187					.0269	.01	.74	2.52	.38	.013	.00	.00	PIPE
10142.150	148.925	.770	149.695	11.29	10.12	1.59	151.28	.00	1.21	1.95	2.000	.000	.00	1 .0
.295	.4187					.0236	.01	.77	2.35	.38	.013	.00	.00	PIPE
10142.440	149.049	.798	149.847	11.29	9.65	1.44	151.29	.00	1.21	1.96	2.000	.000	.00	1 .0
.257	.4187					.0207	.01	.80	2.20	.38	.013	.00	.00	PIPE
10142.700	149.156	.827	149.983	11.29	9.20	1.31	151.30	.00	1.21	1.97	2.000	.000	.00	1 .0
.224	.4187					.0182	.00	.83	2.05	.38	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10142.920	149.250	.857	150.107	11.29	8.77 / 1.19 / .0160	151.30 / .00	.86	1.21 / 1.92	1.98 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.110	149.329	.889	150.218	11.29	8.36 / 1.09 / .0141	151.30 / .00	.89	1.21 / 1.79	1.99 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.280	149.397	.922	150.319	11.29	7.97 / .99 / .0124	151.31 / .00	.92	1.21 / 1.67	1.99 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.410	149.454	.957	150.411	11.29	7.60 / .90 / .0109	151.31 / .00	.96	1.21 / 1.55	2.00 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.520	149.500	.993	150.493	11.29	7.25 / .82 / .0096	151.31 / .00	.99	1.21 / 1.45	2.00 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.610	149.537	1.031	150.568	11.29	6.91 / .74 / .0084	151.31 / .00	1.03	1.21 / 1.35	2.00 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.680	149.565	1.071	150.636	11.29	6.59 / .67 / .0074	151.31 / .00	1.07	1.21 / 1.25	1.99 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.720	149.585	1.113	150.698	11.29	6.28 / .61 / .0066	151.31 / .00	1.11	1.21 / 1.16	1.99 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0
10143.750	149.597	1.157	150.754	11.29	5.99 / .56 / .0058	151.31 / .00	1.16	1.21 / 1.08	1.98 / .38	2.000 / .013	.000 / .00	.00 / .00	1 / PIPE
	.4187												.0

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10143.760	149.600	1.206	150.806	11.29	5.71	.51	151.31	.00	1.21	1.96	2.000	.000	.00	1 .0
WALL	ENTRANCE													
10143.760	149.600	1.898	151.498	11.29	1.49	.03	151.53	.00	.63	4.00	6.000	4.000	.00	0 .0
10143.760	149.600	.126	149.726	11.29	22.39	7.78	157.51	.00	.63	4.00	6.000	4.000	.00	0 .0
.748	.0825				.6915	.52	.13	11.11	.24	.013	.00	.00	BOX	
10144.510	149.662	.122	149.784	11.29	23.06	8.26	158.04	.00	.63	4.00	6.000	4.000	.00	0 .0
1.166	.0825				.7854	.92	.12	11.61	.24	.013	.00	.00	BOX	
10145.670	149.758	.117	149.875	11.29	24.18	9.08	158.96	.00	.63	4.00	6.000	4.000	.00	0 .0
1.081	.0825				.9174	.99	.12	12.47	.24	.013	.00	.00	BOX	
10146.750	149.847	.111	149.958	11.29	25.36	9.99	159.95	.00	.63	4.00	6.000	4.000	.00	0 .0
1.005	.0825				1.0717	1.08	.11	13.40	.24	.013	.00	.00	BOX	
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.07173														
10147.760	149.930	.106	150.036	11.29	26.60	10.99	161.02	.00	.63	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10147.760	149.930	.386	150.316	11.29	26.56	10.96	161.27	.00	1.21	1.58	2.000	.000	.00	1 .0
13.282	.3878				.3688	4.90	.39	9.02	.38	.013	.00	.00	PIPE	
10161.040	155.080	.389	155.469	11.29	26.24	10.69	166.16	.00	1.21	1.58	2.000	.000	.00	1 .0
19.859	.3878				.3395	6.74	.39	8.87	.38	.013	.00	.00	PIPE	
10180.900	162.781	.402	163.183	11.29	25.02	9.72	172.90	.00	1.21	1.60	2.000	.000	.00	1 .0
9.548	.3878				.2967	2.83	.40	8.31	.38	.013	.00	.00	PIPE	

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10190.450	166.483	.416	166.899	11.29	23.86	8.84	175.74	.00	1.21	1.62	2.000	.000	.00	1 .0
6.146	.3878					.2593	1.59	.42	7.79	.38	.013	.00	.00	PIPE
10196.590	168.866	.430	169.297	11.29	22.75	8.03	177.33	.00	1.21	1.64	2.000	.000	.00	1 .0
4.442	.3878					.2265	1.01	.43	7.29	.38	.013	.00	.00	PIPE
10201.030	170.589	.444	171.033	11.29	21.69	7.30	178.34	.00	1.21	1.66	2.000	.000	.00	1 .0
3.415	.3878					.1980	.68	.44	6.83	.38	.013	.00	.00	PIPE
10204.450	171.913	.460	172.373	11.29	20.68	6.64	179.01	.00	1.21	1.68	2.000	.000	.00	1 .0
2.742	.3878					.1732	.47	.46	6.40	.38	.013	.00	.00	PIPE
10207.190	172.977	.475	173.452	11.29	19.72	6.04	179.49	.00	1.21	1.70	2.000	.000	.00	1 .0
2.249	.3878					.1514	.34	.48	5.99	.38	.013	.00	.00	PIPE
10209.440	173.849	.492	174.341	11.29	18.80	5.49	179.83	.00	1.21	1.72	2.000	.000	.00	1 .0
1.888	.3878					.1325	.25	.49	5.61	.38	.013	.00	.00	PIPE
10211.330	174.581	.509	175.090	11.29	17.92	4.99	180.08	.00	1.21	1.74	2.000	.000	.00	1 .0
1.605	.3878					.1158	.19	.51	5.25	.38	.013	.00	.00	PIPE
10212.930	175.203	.526	175.729	11.29	17.09	4.53	180.26	.00	1.21	1.76	2.000	.000	.00	1 .0
1.376	.3878					.1013	.14	.53	4.92	.38	.013	.00	.00	PIPE
10214.310	175.736	.544	176.281	11.29	16.29	4.12	180.40	.00	1.21	1.78	2.000	.000	.00	1 .0
1.189	.3878					.0886	.11	.54	4.60	.38	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10215.500	176.198	.563	176.761	11.29	15.54	3.75	180.51	.00	1.21	1.80	2.000	.000	.00	1 .0
1.034	.3878					.0776	.08	.56	4.31	.38	.013	.00	.00	PIPE
10216.530	176.598	.583	177.182	11.29	14.81	3.41	180.59	.00	1.21	1.82	2.000	.000	.00	1 .0
.906	.3878					.0679	.06	.58	4.03	.38	.013	.00	.00	PIPE
10217.440	176.950	.603	177.553	11.29	14.12	3.10	180.65	.00	1.21	1.84	2.000	.000	.00	1 .0
.794	.3878					.0594	.05	.60	3.77	.38	.013	.00	.00	PIPE
10218.230	177.257	.624	177.882	11.29	13.47	2.82	180.70	.00	1.21	1.85	2.000	.000	.00	1 .0
.697	.3878					.0520	.04	.62	3.53	.38	.013	.00	.00	PIPE
10218.930	177.528	.646	178.174	11.29	12.84	2.56	180.73	.00	1.21	1.87	2.000	.000	.00	1 .0
.613	.3878					.0456	.03	.65	3.30	.38	.013	.00	.00	PIPE
10219.540	177.765	.669	178.434	11.29	12.24	2.33	180.76	.00	1.21	1.89	2.000	.000	.00	1 .0
.539	.3878					.0400	.02	.67	3.09	.38	.013	.00	.00	PIPE
10220.080	177.974	.693	178.668	11.29	11.67	2.12	180.78	.00	1.21	1.90	2.000	.000	.00	1 .0
.475	.3878					.0350	.02	.69	2.89	.38	.013	.00	.00	PIPE
10220.560	178.158	.718	178.876	11.29	11.13	1.92	180.80	.00	1.21	1.92	2.000	.000	.00	1 .0
.420	.3878					.0307	.01	.72	2.70	.38	.013	.00	.00	PIPE
10220.980	178.321	.743	179.064	11.29	10.61	1.75	180.81	.00	1.21	1.93	2.000	.000	.00	1 .0
.365	.3878					.0269	.01	.74	2.52	.38	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10221.340	178.463	.770	179.233	11.29	10.12	1.59	180.82	.00	1.21	1.95	2.000	.000	.00	1 .0
.320	.3878					.0236	.01	.77	2.35	.38	.013	.00	.00	PIPE
10221.660	178.587	.798	179.385	11.29	9.65	1.44	180.83	.00	1.21	1.96	2.000	.000	.00	1 .0
.279	.3878					.0207	.01	.80	2.20	.38	.013	.00	.00	PIPE
10221.940	178.695	.827	179.522	11.29	9.20	1.31	180.84	.00	1.21	1.97	2.000	.000	.00	1 .0
.242	.3878					.0182	.00	.83	2.05	.38	.013	.00	.00	PIPE
10222.180	178.789	.857	179.646	11.29	8.77	1.19	180.84	.00	1.21	1.98	2.000	.000	.00	1 .0
.206	.3878					.0160	.00	.86	1.92	.38	.013	.00	.00	PIPE
10222.390	178.869	.889	179.758	11.29	8.36	1.09	180.84	.00	1.21	1.99	2.000	.000	.00	1 .0
.176	.3878					.0141	.00	.89	1.79	.38	.013	.00	.00	PIPE
10222.570	178.937	.922	179.859	11.29	7.97	.99	180.85	.00	1.21	1.99	2.000	.000	.00	1 .0
.146	.3878					.0124	.00	.92	1.67	.38	.013	.00	.00	PIPE
10222.710	178.993	.957	179.950	11.29	7.60	.90	180.85	.00	1.21	2.00	2.000	.000	.00	1 .0
.121	.3878					.0109	.00	.96	1.55	.38	.013	.00	.00	PIPE
10222.830	179.040	.993	180.033	11.29	7.25	.82	180.85	.00	1.21	2.00	2.000	.000	.00	1 .0
.096	.3878					.0096	.00	.99	1.45	.38	.013	.00	.00	PIPE
10222.930	179.077	1.031	180.108	11.29	6.91	.74	180.85	.00	1.21	2.00	2.000	.000	.00	1 .0
.072	.3878					.0084	.00	1.03	1.35	.38	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:11:12:45

MAPLE CANYON
SYSTEM 1A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10223.000	179.105	1.071	180.176	11.29	6.59	.67	180.85	.00	1.21	1.99	2.000	.000	.00	1 .0
.051	.3878				.0074	.00	1.07	1.25	.38	.013	.00	.00		PIPE
10223.050	179.125	1.113	180.238	11.29	6.28	.61	180.85	.00	1.21	1.99	2.000	.000	.00	1 .0
.030	.3878				.0066	.00	1.11	1.16	.38	.013	.00	.00		PIPE
10223.080	179.137	1.157	180.294	11.29	5.99	.56	180.85	.00	1.21	1.98	2.000	.000	.00	1 .0
.008	.3878				.0058	.00	1.16	1.08	.38	.013	.00	.00		PIPE
10223.090	179.140	1.206	180.346	11.29	5.71	.51	180.85	.00	1.21	1.96	2.000	.000	.00	1 .0
JUNCT STR	.0000				.0036	.00	1.21	1.00		.013	.00	.00		PIPE

---------- WARNING - Junction Analysis - Large Lateral Flow(s)----------

10223.090	179.140	1.841	180.981	4.40	2.49	.10	181.08	.00	.80	.00	1.500	.000	.00	1 .0

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:10:58:34

MAPLE CANYON
SYSTEM 1B

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10227.090	179.310	1.500	180.810	4.40	2.49	.10	180.91	.00	.80	.00	1.500	.000	.00	1 .0
.000	.0247					.0017	.00	1.50	.00	.53	.013	.00	.00	PIPE
10227.090	179.310	1.500	180.810	4.40	2.49	.10	180.91	.00	.80	.00	1.500	.000	.00	1 .0
5.604	.0247					.0016	.01	1.50	.00	.53	.013	.00	.00	PIPE
10232.690	179.448	1.360	180.808	4.40	2.61	.11	180.91	.00	.80	.87	1.500	.000	.00	1 .0
3.004	.0247					.0016	.00	1.36	.33	.53	.013	.00	.00	PIPE
10235.700	179.523	1.280	180.803	4.40	2.74	.12	180.92	.00	.80	1.06	1.500	.000	.00	1 .0
2.409	.0247					.0017	.00	1.28	.39	.53	.013	.00	.00	PIPE
10238.110	179.582	1.213	180.795	4.40	2.87	.13	180.92	.00	.80	1.18	1.500	.000	.00	1 .0
1.981	.0247					.0019	.00	1.21	.44	.53	.013	.00	.00	PIPE
10240.090	179.631	1.155	180.786	4.40	3.01	.14	180.93	.00	.80	1.26	1.500	.000	.00	1 .0
1.722	.0247					.0021	.00	1.16	.49	.53	.013	.00	.00	PIPE
10241.810	179.674	1.102	180.776	4.40	3.16	.16	180.93	.00	.80	1.32	1.500	.000	.00	1 .0
.041	.0247					.0023	.00	1.10	.54	.53	.013	.00	.00	PIPE
10241.850	179.675	1.054	180.729	4.40	3.32	.17	180.90	.00	.80	1.37	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
10241.850	179.675	.557	180.232	4.40	7.36	.84	181.07	.00	.80	1.45	1.500	.000	.00	1 .0
1.129	.0247					.0190	.02	.56	2.02	.53	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:10:58:34

MAPLE CANYON
SYSTEM 1B

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10242.980	179.702	.577	180.279	4.40	7.01	.76	181.04	.00	.80	1.46	1.500	.000	.00	1 .0
6.017	.0247					.0166	.10	.58	1.88	.53	.013	.00	.00	PIPE
10249.000	179.851	.598	180.449	4.40	6.69	.69	181.14	.00	.80	1.47	1.500	.000	.00	1 .0
4.077	.0247					.0146	.06	.60	1.76	.53	.013	.00	.00	PIPE
10253.070	179.952	.620	180.572	4.40	6.37	.63	181.20	.00	.80	1.48	1.500	.000	.00	1 .0
2.897	.0247					.0128	.04	.62	1.64	.53	.013	.00	.00	PIPE
10255.970	180.023	.643	180.666	4.40	6.08	.57	181.24	.00	.80	1.48	1.500	.000	.00	1 .0
2.171	.0247					.0113	.02	.64	1.53	.53	.013	.00	.00	PIPE
10258.140	180.077	.666	180.743	4.40	5.79	.52	181.26	.00	.80	1.49	1.500	.000	.00	1 .0
1.515	.0247					.0099	.01	.67	1.43	.53	.013	.00	.00	PIPE
10259.660	180.114	.691	180.805	4.40	5.53	.47	181.28	.00	.80	1.50	1.500	.000	.00	1 .0
1.069	.0247					.0087	.01	.69	1.33	.53	.013	.00	.00	PIPE
10260.730	180.141	.717	180.858	4.40	5.27	.43	181.29	.00	.80	1.50	1.500	.000	.00	1 .0
.715	.0247					.0077	.01	.72	1.24	.53	.013	.00	.00	PIPE
10261.440	180.158	.744	180.902	4.40	5.02	.39	181.29	.00	.80	1.50	1.500	.000	.00	1 .0
.368	.0247					.0067	.00	.74	1.16	.53	.013	.00	.00	PIPE
10261.810	180.167	.773	180.940	4.40	4.79	.36	181.30	.00	.80	1.50	1.500	.000	.00	1 .0
.110	.0247					.0059	.00	.77	1.08	.53	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time:10:58:34

MAPLE CANYON
SYSTEM 1B

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10261.920	180.170	.804	180.974	4.40	4.56	.32	181.30	.00	.80	1.50	1.500	.000	.00	1 .0

System 1A

Q =	11.29	cfs
V =	25.65	ft/sec
D =	0.396	ft
A =	0.440156	ft²
Ye =	0.469125	ft
g =	32.2	ft/sec²
Fr =	6.599565	
From Figure 7-2		
Ho =	10.61219	
HLoss/Ho	0.70	
HLoss =	7.428532	
Remaining Energy	3.183656	
Area Above Sill		
Height	0.1	ft
Width	10.75	ft
Area Above Sill	1.075	in
Depth of Sill	0.916667	ft
Total Depth =	1.016667	ft
Velocity	10.50233	ft/sec
TH	2.729382	OK

Figure 7-2

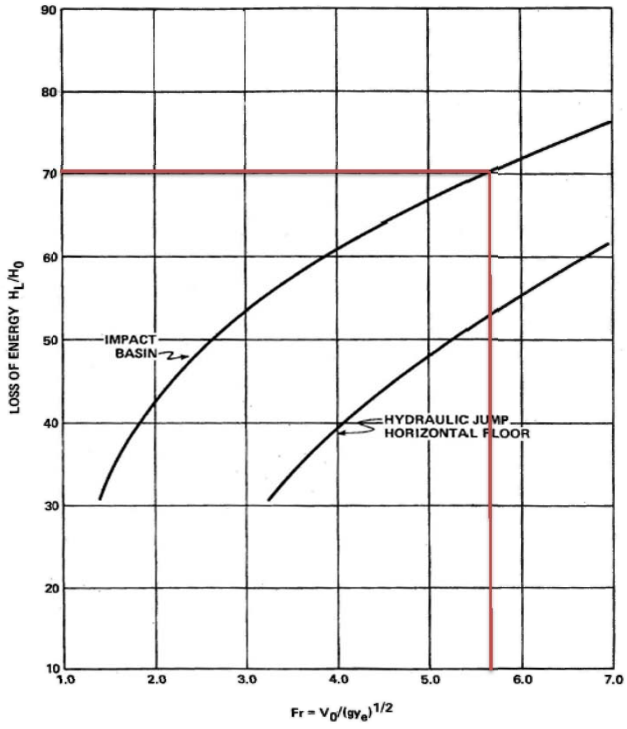


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 2
(ALBATROSS & OLIVE)

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Worksheet for 2 Existing

Project Description

Solve For	Efficiency

Input Data

Discharge		4.31	ft³/s
Slope		3.50	%
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%
Curb Opening Length		15.00	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	4.31	ft³/s
Bypass Flow	0.00	ft³/s
Spread	8.86	ft
Depth	3.15	in
Flow Area	0.87	ft²
Gutter Depression	1.02	in
Total Depression	5.02	in
Velocity	4.96	ft/s
Splash Over Velocity	8.15	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.04	
Grate Flow Ratio	0.60	
Equivalent Cross Slope	0.1449	ft/ft
Active Grate Length	2.01	ft
Length Factor	0.81	
Total Interception Length	16.06	ft

Worksheet for 2 Existing

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for 2 Upgrade and Revised Q

Project Description

Solve For	Efficiency

Input Data

Discharge	4.29	ft³/s
Slope	3.03	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	15.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	100.00	%
Intercepted Flow	4.29	ft³/s
Bypass Flow	0.00	ft³/s
Spread	9.23	ft
Depth	3.36	in
Flow Area	0.92	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	4.64	ft/s
Equivalent Cross Slope	0.1572	ft/ft
Length Factor	1.03	
Total Interception Length	14.61	ft

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Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10028.490	126.150	1.500	127.650	4.29	2.43	.09	127.74	.00	.79	.00	1.500	.000	.00	1 .0
.000	.0694					.0016	.00	1.50	.00	.40	.013	.00	.00	PIPE
10028.490	126.150	1.500	127.650	4.29	2.43	.09	127.74	.00	.79	.00	1.500	.000	.00	1 .0
1.108	.0694					.0015	.00	1.50	.00	.40	.013	.00	.00	PIPE
10029.600	126.227	1.420	127.647	4.29	2.48	.10	127.74	.00	.79	.67	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
10029.600	126.227	.411	126.638	4.29	10.93	1.85	128.49	.00	.79	1.34	1.500	.000	.00	1 .0
10.082	.0694					.0590	.60	.41	3.55	.40	.013	.00	.00	PIPE
10039.680	126.927	.421	127.348	4.29	10.54	1.72	129.07	.00	.79	1.35	1.500	.000	.00	1 .0
8.386	.0694					.0525	.44	.42	3.38	.40	.013	.00	.00	PIPE
10048.070	127.509	.436	127.945	4.29	10.05	1.57	129.51	.00	.79	1.36	1.500	.000	.00	1 .0
5.438	.0694					.0460	.25	.44	3.16	.40	.013	.00	.00	PIPE
10053.500	127.887	.451	128.338	4.29	9.58	1.42	129.76	.00	.79	1.38	1.500	.000	.00	1 .0
3.892	.0694					.0403	.16	.45	2.96	.40	.013	.00	.00	PIPE
10057.400	128.157	.467	128.624	4.29	9.13	1.30	129.92	.00	.79	1.39	1.500	.000	.00	1 .0
2.977	.0694					.0353	.10	.47	2.77	.40	.013	.00	.00	PIPE
10060.370	128.364	.483	128.847	4.29	8.71	1.18	130.02	.00	.79	1.40	1.500	.000	.00	1 .0
2.335	.0694					.0309	.07	.48	2.59	.40	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10062.710	128.526	.500	129.026	4.29	8.30	1.07	130.10	.00	.79	1.41	1.500	.000	.00	1 .0
1.871	.0694				.0270	.05	.50	2.42	.40	.013	.00	.00		PIPE
10064.580	128.656	.518	129.174	4.29	7.92	.97	130.15	.00	.79	1.43	1.500	.000	.00	1 .0
1.541	.0694				.0237	.04	.52	2.26	.40	.013	.00	.00		PIPE
10066.120	128.763	.536	129.299	4.29	7.55	.88	130.18	.00	.79	1.44	1.500	.000	.00	1 .0
1.242	.0694				.0208	.03	.54	2.12	.40	.013	.00	.00		PIPE
10067.360	128.849	.556	129.405	4.29	7.20	.80	130.21	.00	.79	1.45	1.500	.000	.00	1 .0
1.037	.0694				.0182	.02	.56	1.98	.40	.013	.00	.00		PIPE
10068.400	128.921	.576	129.497	4.29	6.86	.73	130.23	.00	.79	1.46	1.500	.000	.00	1 .0
.852	.0694				.0160	.01	.58	1.85	.40	.013	.00	.00		PIPE
10069.250	128.980	.597	129.577	4.29	6.54	.66	130.24	.00	.79	1.47	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10069.250	128.980	.191	129.171	4.29	15.86	3.90	133.08	.00	.54	2.11	6.000	.000	.00	1 .0
1.166	.0825				.3225	.38	.19	7.80	.26	.013	.00	.00		PIPE
10070.420	129.076	.186	129.262	4.29	16.44	4.20	133.46	.00	.54	2.08	6.000	.000	.00	1 .0
1.471	.0825				.3638	.53	.19	8.18	.26	.013	.00	.00		PIPE
10071.890	129.198	.180	129.378	4.29	17.24	4.62	134.00	.00	.54	2.05	6.000	.000	.00	1 .0
1.362	.0825				.4178	.57	.18	8.72	.26	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10073.250	129.310	.175	129.485	4.29	18.09	5.08	134.56	.00	.54	2.02	6.000	.000	.00	0 .0
WALL	EXIT													
10073.250	129.310	.288	129.598	4.29	18.08	5.08	134.68	.00	.79	1.18	1.500	.000	.00	1 .0
12.363	.2568				.2569	3.18	.29	7.11	.29	.013	.00	.00	PIPE	
10085.610	132.485	.288	132.773	4.29	18.08	5.08	137.85	.00	.79	1.18	1.500	.000	.00	1 .0
27.002	.2568				.2533	6.84	.29	7.11	.29	.013	.00	.00	PIPE	
10112.620	139.418	.289	139.707	4.29	17.91	4.98	144.69	.00	.79	1.18	1.500	.000	.00	1 .0
19.451	.2568				.2340	4.55	.29	7.02	.29	.013	.00	.00	PIPE	
10132.070	144.413	.299	144.712	4.29	17.08	4.53	149.24	.00	.79	1.20	1.500	.000	.00	1 .0
7.686	.2568				.2045	1.57	.30	6.58	.29	.013	.00	.00	PIPE	
10139.750	146.387	.309	146.696	4.29	16.29	4.12	150.81	.00	.79	1.21	1.500	.000	.00	1 .0
4.658	.2568				.1788	.83	.31	6.16	.29	.013	.00	.00	PIPE	
10144.410	147.583	.320	147.903	4.29	15.53	3.74	151.65	.00	.79	1.23	1.500	.000	.00	1 .0
3.279	.2568				.1564	.51	.32	5.77	.29	.013	.00	.00	PIPE	
10147.690	148.425	.331	148.756	4.29	14.81	3.40	152.16	.00	.79	1.24	1.500	.000	.00	1 .0
2.484	.2568				.1367	.34	.33	5.41	.29	.013	.00	.00	PIPE	
10150.170	149.063	.342	149.405	4.29	14.12	3.09	152.50	.00	.79	1.26	1.500	.000	.00	1 .0
1.961	.2568				.1195	.23	.34	5.06	.29	.013	.00	.00	PIPE	

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10152.130	149.567	.354	149.921	4.29	13.46	2.81	152.73	.00	.79	1.27	1.500	.000	.00	1 .0
1.601	.2568				.1045	.17	.35	4.74	.29	.013	.00	.00		PIPE
10153.740	149.977	.366	150.344	4.29	12.83	2.56	152.90	.00	.79	1.29	1.500	.000	.00	1 .0
1.332	.2568				.0913	.12	.37	4.44	.29	.013	.00	.00		PIPE
10155.070	150.320	.378	150.698	4.29	12.24	2.32	153.02	.00	.79	1.30	1.500	.000	.00	1 .0
1.115	.2568				.0799	.09	.38	4.16	.29	.013	.00	.00		PIPE
10156.180	150.606	.392	150.998	4.29	11.67	2.11	153.11	.00	.79	1.32	1.500	.000	.00	1 .0
.959	.2568				.0699	.07	.39	3.89	.29	.013	.00	.00		PIPE
10157.140	150.852	.405	151.257	4.29	11.12	1.92	153.18	.00	.79	1.33	1.500	.000	.00	1 .0
.821	.2568				.0611	.05	.41	3.64	.29	.013	.00	.00		PIPE
10157.960	151.063	.419	151.482	4.29	10.61	1.75	153.23	.00	.79	1.35	1.500	.000	.00	1 .0
.707	.2568				.0535	.04	.42	3.41	.29	.013	.00	.00		PIPE
10158.670	151.245	.434	151.679	4.29	10.11	1.59	153.27	.00	.79	1.36	1.500	.000	.00	1 .0
.616	.2568				.0468	.03	.43	3.19	.29	.013	.00	.00		PIPE
10159.290	151.403	.449	151.852	4.29	9.64	1.44	153.30	.00	.79	1.37	1.500	.000	.00	1 .0
.534	.2568				.0410	.02	.45	2.99	.29	.013	.00	.00		PIPE
10159.820	151.540	.465	152.005	4.29	9.19	1.31	153.32	.00	.79	1.39	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10159.820	151.540	.163	151.703	4.29	20.11	6.28	157.98	.00	.54	1.95	6.000	.000	.00	1 .0
1.034	.0850					.6447	.67	.16	10.72	.26	.013	.00	.00	PIPE
10160.850	151.628	.158	151.786	4.29	20.97	6.83	158.61	.00	.54	1.92	6.000	.000	.00	1 .0
1.046	.0850					.7330	.77	.16	11.32	.26	.013	.00	.00	PIPE
10161.900	151.717	.153	151.870	4.29	21.99	7.51	159.38	.00	.54	1.89	6.000	.000	.00	1 .0
.987	.0850					.8405	.83	.15	12.07	.26	.013	.00	.00	PIPE
10162.890	151.801	.148	151.949	4.29	23.06	8.26	160.21	.00	.54	1.86	6.000	.000	.00	1 .0
.934	.0850					.9655	.90	.15	12.86	.26	.013	.00	.00	PIPE
10163.820	151.880	.144	152.024	4.29	24.19	9.08	161.11	.00	.54	1.84	6.000	.000	.00	0 .0
WALL	EXIT													
10163.820	151.880	.235	152.115	4.29	24.21	9.10	161.22	.00	.79	1.09	1.500	.000	.00	1 .0
6.511	.5879					.5887	3.83	.24	10.59	.24	.013	.00	.00	PIPE
10170.330	155.708	.235	155.943	4.29	24.21	9.10	165.05	.00	.79	1.09	1.500	.000	.00	1 .0
21.828	.5879					.5740	12.53	.24	10.59	.24	.013	.00	.00	PIPE
10192.160	168.541	.237	168.778	4.29	23.80	8.80	177.58	.00	.79	1.09	1.500	.000	.00	1 .0
12.373	.5879					.5239	6.48	.24	10.34	.24	.013	.00	.00	PIPE
10204.530	175.815	.245	176.061	4.29	22.70	8.00	184.06	.00	.79	1.11	1.500	.000	.00	1 .0
5.529	.5879					.4580	2.53	.25	9.69	.24	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10210.060	179.066	.254	179.320	4.29	21.64	7.27	186.59	.00	.79	1.13	1.500	.000	.00	1 .0
3.479	.5879				.4002	1.39	.25	9.09	.24	.013	.00	.00		PIPE
10213.540	181.112	.262	181.374	4.29	20.63	6.61	187.98	.00	.79	1.14	1.500	.000	.00	1 .0
2.481	.5879				.3494	.87	.26	8.51	.24	.013	.00	.00		PIPE
10216.020	182.570	.271	182.841	4.29	19.67	6.01	188.85	.00	.79	1.15	1.500	.000	.00	1 .0
1.900	.5879				.3052	.58	.27	7.98	.24	.013	.00	.00		PIPE
10217.920	183.688	.280	183.968	4.29	18.76	5.46	189.43	.00	.79	1.17	1.500	.000	.00	1 .0
1.516	.5879				.2667	.40	.28	7.47	.24	.013	.00	.00		PIPE
10219.430	184.579	.290	184.869	4.29	17.88	4.97	189.84	.00	.79	1.18	1.500	.000	.00	1 .0
1.247	.5879				.2330	.29	.29	7.00	.24	.013	.00	.00		PIPE
10220.680	185.312	.299	185.611	4.29	17.05	4.52	190.13	.00	.79	1.20	1.500	.000	.00	1 .0
1.039	.5879				.2036	.21	.30	6.56	.24	.013	.00	.00		PIPE
10221.720	185.923	.310	186.233	4.29	16.26	4.10	190.34	.00	.79	1.21	1.500	.000	.00	1 .0
.886	.5879				.1780	.16	.31	6.15	.24	.013	.00	.00		PIPE
10222.610	186.443	.320	186.764	4.29	15.50	3.73	190.49	.00	.79	1.23	1.500	.000	.00	1 .0
.759	.5879				.1555	.12	.32	5.76	.24	.013	.00	.00		PIPE
10223.370	186.890	.331	187.221	4.29	14.78	3.39	190.61	.00	.79	1.24	1.500	.000	.00	1 .0
.658	.5879				.1359	.09	.33	5.39	.24	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10224.020	187.276	.342	187.619	4.29	14.09	3.08	190.70	.00	.79	1.26	1.500	.000	.00	1 .0
.572	.5879					.1188	.07	.34	5.05	.24	.013	.00	.00	PIPE
10224.600	187.613	.354	187.967	4.29	13.44	2.80	190.77	.00	.79	1.27	1.500	.000	.00	1 .0
.502	.5879					.1039	.05	.35	4.73	.24	.013	.00	.00	PIPE
10225.100	187.908	.366	188.274	4.29	12.81	2.55	190.82	.00	.79	1.29	1.500	.000	.00	1 .0
.440	.5879					.0909	.04	.37	4.43	.24	.013	.00	.00	PIPE
10225.540	188.166	.379	188.545	4.29	12.22	2.32	190.86	.00	.79	1.30	1.500	.000	.00	1 .0
.389	.5879					.0795	.03	.38	4.15	.24	.013	.00	.00	PIPE
10225.930	188.395	.392	188.787	4.29	11.65	2.11	190.89	.00	.79	1.32	1.500	.000	.00	1 .0
.343	.5879					.0696	.02	.39	3.88	.24	.013	.00	.00	PIPE
10226.270	188.596	.406	189.002	4.29	11.10	1.91	190.92	.00	.79	1.33	1.500	.000	.00	1 .0
.304	.5879					.0609	.02	.41	3.64	.24	.013	.00	.00	PIPE
10226.570	188.775	.420	189.195	4.29	10.59	1.74	190.94	.00	.79	1.35	1.500	.000	.00	1 .0
.270	.5879					.0533	.01	.42	3.40	.24	.013	.00	.00	PIPE
10226.840	188.933	.434	189.367	4.29	10.10	1.58	190.95	.00	.79	1.36	1.500	.000	.00	1 .0
.238	.5879					.0466	.01	.43	3.18	.24	.013	.00	.00	PIPE
10227.080	189.073	.449	189.522	4.29	9.63	1.44	190.96	.00	.79	1.37	1.500	.000	.00	1 .0
.210	.5879					.0408	.01	.45	2.98	.24	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10227.290	189.197	.465	189.662	4.29	9.18	1.31	190.97	.00	.79	1.39	1.500	.000	.00	1 .0
.187	.5879				.0357	.01	.47	2.79	.24	.013	.00	.00		PIPE
10227.480	189.306	.481	189.787	4.29	8.75	1.19	190.98	.00	.79	1.40	1.500	.000	.00	1 .0
.164	.5879				.0313	.01	.48	2.61	.24	.013	.00	.00		PIPE
10227.640	189.402	.498	189.901	4.29	8.34	1.08	190.98	.00	.79	1.41	1.500	.000	.00	1 .0
.144	.5879				.0274	.00	.50	2.44	.24	.013	.00	.00		PIPE
10227.790	189.487	.516	190.003	4.29	7.95	.98	190.99	.00	.79	1.43	1.500	.000	.00	1 .0
.125	.5879				.0240	.00	.52	2.28	.24	.013	.00	.00		PIPE
10227.910	189.560	.535	190.095	4.29	7.58	.89	190.99	.00	.79	1.44	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10227.910	189.560	.180	189.740	4.29	17.40	4.70	194.44	.00	.54	2.05	6.000	.000	.00	1 .0
.272	.0850				.4059	.11	.18	8.83	.26	.013	.00	.00		PIPE
10228.180	189.583	.178	189.761	4.29	17.59	4.80	194.56	.00	.54	2.04	6.000	.000	.00	1 .0
1.329	.0850				.4419	.59	.18	8.96	.26	.013	.00	.00		PIPE
10229.510	189.696	.172	189.868	4.29	18.45	5.28	195.15	.00	.54	2.00	6.000	.000	.00	1 .0
1.240	.0850				.5070	.63	.17	9.54	.26	.013	.00	.00		PIPE
10230.750	189.802	.167	189.969	4.29	19.35	5.81	195.78	.00	.54	1.97	6.000	.000	.00	1 .0
1.158	.0850				.5824	.67	.17	10.17	.26	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10231.910	189.900	.162	190.062	4.29	20.29	6.39	196.46	.00	.54	1.95	6.000	.000	.00	0 .0
WALL	EXIT													
10231.910	189.900	.266	190.166	4.29	20.26	6.38	196.54	.00	.79	1.15	1.500	.000	.00	1 .0
2.104	.4781					.3441	.72	.27	8.31	.25	.013	.00	.00	PIPE
10234.010	190.906	.270	191.176	4.29	19.82	6.10	197.28	.00	.79	1.15	1.500	.000	.00	1 .0
3.291	.4781					.3123	1.03	.27	8.06	.25	.013	.00	.00	PIPE
10237.310	192.480	.279	192.759	4.29	18.90	5.55	198.31	.00	.79	1.17	1.500	.000	.00	1 .0
2.410	.4781					.2726	.66	.28	7.55	.25	.013	.00	.00	PIPE
10239.720	193.632	.288	193.920	4.29	18.02	5.04	198.96	.00	.79	1.18	1.500	.000	.00	1 .0
1.868	.4781					.2381	.44	.29	7.08	.25	.013	.00	.00	PIPE
10241.580	194.525	.298	194.823	4.29	17.18	4.58	199.41	.00	.79	1.20	1.500	.000	.00	1 .0
1.507	.4781					.2081	.31	.30	6.63	.25	.013	.00	.00	PIPE
10243.090	195.246	.308	195.554	4.29	16.38	4.17	199.72	.00	.79	1.21	1.500	.000	.00	1 .0
1.245	.4781					.1818	.23	.31	6.21	.25	.013	.00	.00	PIPE
10244.340	195.841	.318	196.159	4.29	15.62	3.79	199.95	.00	.79	1.23	1.500	.000	.00	1 .0
1.044	.4781					.1588	.17	.32	5.82	.25	.013	.00	.00	PIPE
10245.380	196.340	.329	196.669	4.29	14.89	3.44	200.11	.00	.79	1.24	1.500	.000	.00	1 .0
.888	.4781					.1389	.12	.33	5.45	.25	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10246.270	196.765	.341	197.106	4.29	14.20	3.13	200.24	.00	.79	1.26	1.500	.000	.00	1 .0
.768	.4781					.1215	.09	.34	5.11	.25	.013	.00	.00	PIPE
10247.040	197.131	.352	197.484	4.29	13.54	2.85	200.33	.00	.79	1.27	1.500	.000	.00	1 .0
.663	.4781					.1061	.07	.35	4.78	.25	.013	.00	.00	PIPE
10247.700	197.449	.364	197.813	4.29	12.91	2.59	200.40	.00	.79	1.29	1.500	.000	.00	1 .0
.577	.4781					.0928	.05	.36	4.48	.25	.013	.00	.00	PIPE
10248.280	197.724	.377	198.102	4.29	12.31	2.35	200.45	.00	.79	1.30	1.500	.000	.00	1 .0
.506	.4781					.0812	.04	.38	4.19	.25	.013	.00	.00	PIPE
10248.780	197.966	.390	198.357	4.29	11.74	2.14	200.50	.00	.79	1.32	1.500	.000	.00	1 .0
.445	.4781					.0710	.03	.39	3.92	.25	.013	.00	.00	PIPE
10249.230	198.180	.403	198.583	4.29	11.19	1.94	200.53	.00	.79	1.33	1.500	.000	.00	1 .0
.392	.4781					.0621	.02	.40	3.67	.25	.013	.00	.00	PIPE
10249.620	198.367	.417	198.784	4.29	10.67	1.77	200.55	.00	.79	1.34	1.500	.000	.00	1 .0
.344	.4781					.0544	.02	.42	3.44	.25	.013	.00	.00	PIPE
10249.960	198.531	.432	198.963	4.29	10.17	1.61	200.57	.00	.79	1.36	1.500	.000	.00	1 .0
.305	.4781					.0476	.01	.43	3.22	.25	.013	.00	.00	PIPE
10250.270	198.677	.447	199.124	4.29	9.70	1.46	200.58	.00	.79	1.37	1.500	.000	.00	1 .0
.268	.4781					.0417	.01	.45	3.01	.25	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10250.530	198.805	.463	199.268	4.29	9.25	1.33	200.60	.00	.79	1.39	1.500	.000	.00	1 .0
.237	.4781					.0365	.01	.46	2.82	.25	.013	.00	.00	PIPE
10250.770	198.918	.479	199.397	4.29	8.82	1.21	200.60	.00	.79	1.40	1.500	.000	.00	1 .0
.208	.4781					.0320	.01	.48	2.63	.25	.013	.00	.00	PIPE
10250.980	199.017	.496	199.513	4.29	8.41	1.10	200.61	.00	.79	1.41	1.500	.000	.00	1 .0
.184	.4781					.0280	.01	.50	2.46	.25	.013	.00	.00	PIPE
10251.160	199.105	.513	199.618	4.29	8.02	1.00	200.62	.00	.79	1.42	1.500	.000	.00	1 .0
.158	.4781					.0245	.00	.51	2.30	.25	.013	.00	.00	PIPE
10251.320	199.181	.532	199.713	4.29	7.64	.91	200.62	.00	.79	1.44	1.500	.000	.00	1 .0
.139	.4781					.0215	.00	.53	2.15	.25	.013	.00	.00	PIPE
10251.460	199.247	.551	199.798	4.29	7.29	.82	200.62	.00	.79	1.45	1.500	.000	.00	1 .0
.122	.4781					.0189	.00	.55	2.01	.25	.013	.00	.00	PIPE
10251.580	199.306	.570	199.876	4.29	6.95	.75	200.63	.00	.79	1.46	1.500	.000	.00	1 .0
.103	.4781					.0165	.00	.57	1.88	.25	.013	.00	.00	PIPE
10251.680	199.354	.591	199.946	4.29	6.62	.68	200.63	.00	.79	1.47	1.500	.000	.00	1 .0
.088	.4781					.0145	.00	.59	1.76	.25	.013	.00	.00	PIPE
10251.770	199.397	.612	200.009	4.29	6.32	.62	200.63	.00	.79	1.47	1.500	.000	.00	1 .0
.071	.4781					.0127	.00	.61	1.64	.25	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:52:14

MAPLE CANYON
SYSTEM 2A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10251.840	199.431	.635	200.066	4.29	6.02	.56	200.63	.00	.79	1.48	1.500	.000	.00	1 .0
.061	.4781					.0112	.00	.64	1.53	.25	.013	.00	.00	PIPE
10251.900	199.460	.658	200.118	4.29	5.74	.51	200.63	.00	.79	1.49	1.500	.000	.00	1 .0
.046	.4781					.0098	.00	.66	1.43	.25	.013	.00	.00	PIPE
10251.950	199.482	.683	200.165	4.29	5.47	.47	200.63	.00	.79	1.49	1.500	.000	.00	1 .0
.037	.4781					.0087	.00	.68	1.33	.25	.013	.00	.00	PIPE
10251.990	199.499	.708	200.208	4.29	5.22	.42	200.63	.00	.79	1.50	1.500	.000	.00	1 .0
.024	.4781					.0076	.00	.71	1.24	.25	.013	.00	.00	PIPE
10252.010	199.511	.735	200.246	4.29	4.98	.38	200.63	.00	.79	1.50	1.500	.000	.00	1 .0
.015	.4781					.0067	.00	.74	1.16	.25	.013	.00	.00	PIPE
10252.030	199.518	.763	200.281	4.29	4.75	.35	200.63	.00	.79	1.50	1.500	.000	.00	1 .0
.004	.4781					.0059	.00	.76	1.08	.25	.013	.00	.00	PIPE
10252.030	199.520	.794	200.314	4.29	4.52	.32	200.63	.00	.79	1.50	1.500	.000	.00	1 .0

System 2A

Q =	4.29	cfs
V =	2.43	ft/sec
D =	1.5	ft
A =	1.765432	ft²
Ye =	0.93953	ft
g =	32.2	ft/sec²
Fr =	0.441797	
From Figure 7-2		
Ho =	1.591691	
HLoss/Ho	0.64	
HLoss =	1.018682	
Remaining Energy	0.573009	
Area Above Sill		
Height	0.1	ft
Width	8.5	ft
Area Above Sill	0.85	in
Depth of Sill	0.916667	ft
Total Depth =	1.016667	ft
Velocity	5.047059	ft/sec
TH	1.412207	OK

Figure 7-2

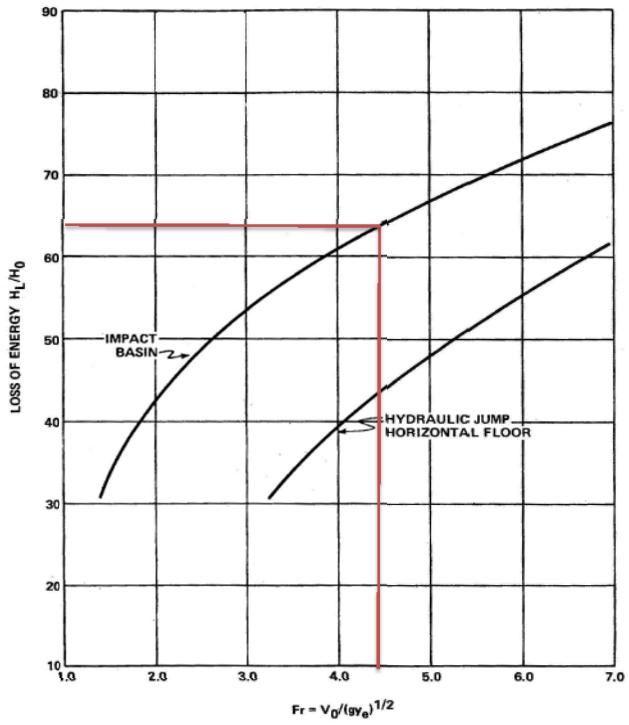


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 3
(2ND BETWEEN QUINCE & PALM)

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Worksheet for 3 Existing

Project Description

Solve For	Spread

Input Data

Discharge		3.71	ft³/s
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Grate Width		2.00	ft
Grate Length		3.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	21.30	ft
Depth	5.11	in
Gutter Depression	0.00	in
Total Depression	0.00	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

Worksheet for ~2015 3 - Curb Inlet In Sag

Project Description

Solve For	Spread

Input Data

Discharge		3.71	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		9.40	%
Road Cross Slope		4.50	%
Curb Opening Length		7.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	6.72	ft
Depth	4.51	in
Gutter Depression	0.88	in
Total Depression	4.88	in

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10020.010	189.530	.290	189.820	3.71	15.48	3.72	193.54	.00	.74	1.18	1.500	.000	.00	0 .0
1.317	.0095					.1953	.26	.29	6.07	.63	.013	.00	.00	PIPE
10021.330	189.542	.283	189.826	3.71	15.97	3.96	193.79	.00	.74	1.17	1.500	.000	.00	0 .0
1.853	.0095					.2187	.41	.28	6.33	.63	.013	.00	.00	PIPE
10023.180	189.560	.274	189.834	3.71	16.75	4.36	194.19	.00	.74	1.16	1.500	.000	.00	0 .0
25.967	.2348					.2259	5.87	.27	6.76	.27	.013	.00	.00	PIPE
10049.150	195.657	.278	195.935	3.71	16.37	4.16	200.10	.00	.74	1.17	1.500	.000	.00	0 .0
12.173	.2348					.2046	2.49	.28	6.54	.27	.013	.00	.00	PIPE
10061.320	198.515	.288	198.804	3.71	15.61	3.78	202.59	.00	.74	1.18	1.500	.000	.00	0 .0
5.973	.2348					.1789	1.07	.29	6.13	.27	.013	.00	.00	PIPE
10067.290	199.918	.298	200.216	3.71	14.88	3.44	203.65	.00	.74	1.20	1.500	.000	.00	0 .0
3.857	.2348					.1564	.60	.30	5.75	.27	.013	.00	.00	PIPE
10071.150	200.824	.308	201.132	3.71	14.19	3.13	204.26	.00	.74	1.21	1.500	.000	.00	0 .0
2.790	.2348					.1366	.38	.31	5.38	.27	.013	.00	.00	PIPE
10073.940	201.479	.318	201.797	3.71	13.53	2.84	204.64	.00	.74	1.23	1.500	.000	.00	0 .0
2.142	.2348					.1193	.26	.32	5.04	.27	.013	.00	.00	PIPE
10076.080	201.982	.329	202.311	3.71	12.90	2.58	204.89	.00	.74	1.24	1.500	.000	.00	0 .0
1.715	.2348					.1043	.18	.33	4.72	.27	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10077.800	202.384	.340	202.724	3.71	12.30	2.35	205.07	.00	.74	1.26	1.500	.000	.00	0 .0
1.402	.2348					.0912	.13	.34	4.42	.27	.013	.00	.00	PIPE
10079.200	202.714	.352	203.066	3.71	11.73	2.13	205.20	.00	.74	1.27	1.500	.000	.00	0 .0
1.174	.2348					.0797	.09	.35	4.14	.27	.013	.00	.00	PIPE
10080.370	202.989	.364	203.353	3.71	11.18	1.94	205.29	.00	.74	1.29	1.500	.000	.00	0 .0
.996	.2348					.0697	.07	.36	3.88	.27	.013	.00	.00	PIPE
10081.370	203.223	.376	203.599	3.71	10.66	1.76	205.36	.00	.74	1.30	1.500	.000	.00	0 .0
.848	.2348					.0609	.05	.38	3.63	.27	.013	.00	.00	PIPE
10082.220	203.422	.389	203.811	3.71	10.16	1.60	205.42	.00	.74	1.31	1.500	.000	.00	0 .0
.727	.2348					.0533	.04	.39	3.40	.27	.013	.00	.00	PIPE
10082.940	203.593	.403	203.996	3.71	9.69	1.46	205.45	.00	.74	1.33	1.500	.000	.00	0 .0
.630	.2348					.0467	.03	.40	3.18	.27	.013	.00	.00	PIPE
10083.570	203.741	.417	204.158	3.71	9.24	1.33	205.48	.00	.74	1.34	1.500	.000	.00	0 .0
.549	.2348					.0408	.02	.42	2.98	.27	.013	.00	.00	PIPE
10084.120	203.870	.431	204.301	3.71	8.81	1.21	205.51	.00	.74	1.36	1.500	.000	.00	0 .0
.475	.2348					.0357	.02	.43	2.79	.27	.013	.00	.00	PIPE
10084.600	203.981	.446	204.427	3.71	8.40	1.10	205.52	.00	.74	1.37	1.500	.000	.00	0 .0
.411	.2348					.0313	.01	.45	2.61	.27	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10085.010	204.078	.462	204.540	3.71	8.01	1.00	205.54	.00	.74	1.39	1.500	.000	.00	0 .0
.359	.2348					.0274	.01	.46	2.44	.27	.013	.00	.00	PIPE
10085.370	204.162	.478	204.640	3.71	7.64	.91	205.55	.00	.74	1.40	1.500	.000	.00	0 .0
.310	.2348					.0240	.01	.48	2.28	.27	.013	.00	.00	PIPE
10085.680	204.235	.495	204.730	3.71	7.28	.82	205.55	.00	.74	1.41	1.500	.000	.00	0 .0
.266	.2348					.0210	.01	.50	2.13	.27	.013	.00	.00	PIPE
10085.940	204.297	.513	204.810	3.71	6.94	.75	205.56	.00	.74	1.42	1.500	.000	.00	0 .0
.231	.2348					.0184	.00	.51	2.00	.27	.013	.00	.00	PIPE
10086.170	204.352	.531	204.883	3.71	6.62	.68	205.56	.00	.74	1.43	1.500	.000	.00	0 .0
.196	.2348					.0162	.00	.53	1.87	.27	.013	.00	.00	PIPE
10086.370	204.398	.550	204.948	3.71	6.31	.62	205.57	.00	.74	1.45	1.500	.000	.00	0 .0
.164	.2348					.0142	.00	.55	1.74	.27	.013	.00	.00	PIPE
10086.530	204.436	.570	205.006	3.71	6.02	.56	205.57	.00	.74	1.46	1.500	.000	.00	0 .0
.140	.2348					.0124	.00	.57	1.63	.27	.013	.00	.00	PIPE
10086.670	204.469	.590	205.059	3.71	5.74	.51	205.57	.00	.74	1.47	1.500	.000	.00	0 .0
.109	.2348					.0109	.00	.59	1.52	.27	.013	.00	.00	PIPE
10086.780	204.495	.612	205.107	3.71	5.47	.46	205.57	.00	.74	1.47	1.500	.000	.00	0 .0
.090	.2348					.0096	.00	.61	1.42	.27	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10086.870	204.516	.634	205.150	3.71	5.22	.42	205.57	.00	.74	1.48	1.500	.000	.00	0 .0
.063	.2348					.0084	.00	.63	1.33	.27	.013	.00	.00	PIPE
10086.940	204.531	.658	205.189	3.71	4.97	.38	205.57	.00	.74	1.49	1.500	.000	.00	0 .0
.048	.2348					.0074	.00	.66	1.24	.27	.013	.00	.00	PIPE
10086.980	204.542	.682	205.224	3.71	4.74	.35	205.57	.00	.74	1.49	1.500	.000	.00	0 .0
.025	.2348					.0065	.00	.68	1.15	.27	.013	.00	.00	PIPE
10087.010	204.548	.708	205.256	3.71	4.52	.32	205.57	.00	.74	1.50	1.500	.000	.00	0 .0
.010	.2348					.0057	.00	.71	1.08	.27	.013	.00	.00	PIPE
10087.020	204.550	.736	205.286	3.71	4.30	.29	205.57	.00	.74	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													
10087.020	204.550	1.139	205.689	3.71	.81	.01	205.70	.00	.30	4.00	6.000	4.000	.00	0 .0
.631	.0825					.0001	.00	1.14	.13	.12	.013	.00	.00	BOX
10087.650	204.602	1.086	205.688	3.71	.85	.01	205.70	.00	.30	4.00	6.000	4.000	.00	0 .0
.600	.0825					.0001	.00	1.09	.14	.12	.013	.00	.00	BOX
10088.250	204.651	1.035	205.687	3.71	.90	.01	205.70	.00	.30	4.00	6.000	4.000	.00	0 .0
.569	.0825					.0001	.00	1.04	.16	.12	.013	.00	.00	BOX
10088.820	204.698	.987	205.686	3.71	.94	.01	205.70	.00	.30	4.00	6.000	4.000	.00	0 .0
.223	.0825					.0001	.00	.99	.17	.12	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) /	Water Elev /	Q (CFS) /	Vel (FPS) / SE Dpth	Vel Head / SF Ave / Froude N	Energy Grd.El. / HF / Norm Dp	Super Elev /	Critical Depth / "N" /	Flow Top Width / X-Fall /	Height/ Dia.-FT / ZR /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip / Type Ch
10089.040	204.717	.965	205.681	3.71	.96	.01	205.70	.00	.30	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10089.040	204.717	.054	204.771	3.71	17.15	4.57	209.34	.00	.30	4.00	6.000	4.000	.00	0 .0
.375	.0825					1.2371	.46	.05	12.99	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.23706														
10089.420	204.748	.052	204.799	3.71	17.98	5.02	209.82	.00	.30	4.00	6.000	4.000	.00	0 .0
.366	.0825					1.4477	.53	.05	13.96	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.44773														
10089.780	204.778	.049	204.827	3.71	18.86	5.52	210.35	.00	.30	4.00	6.000	4.000	.00	0 .0
.342	.0825					1.6944	.58	.05	14.99	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.69439														
10090.130	204.806	.047	204.853	3.71	19.78	6.08	210.93	.00	.30	4.00	6.000	4.000	.00	0 .0
.318	.0825					1.9832	.63	.05	16.10	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.98322														
10090.440	204.832	.045	204.877	3.71	20.75	6.69	211.56	.00	.30	4.00	6.000	4.000	.00	0 .0
.298	.0825					2.3214	.69	.04	17.29	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.32143														
10090.740	204.857	.043	204.900	3.71	21.76	7.35	212.25	.00	.30	4.00	6.000	4.000	.00	0 .0
.278	.0825					2.7175	.76	.04	18.58	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.71750														
10091.020	204.880	.041	204.921	3.71	22.82	8.09	213.01	.00	.30	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10091.020	204.880	.220	205.100	3.71	23.01	8.22	213.32	.00	.74	1.06	1.500	.000	.00	0 .0
10.114	.5807					.5697	5.76	.22	10.41	.22	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10101.140	210.753	.221	210.975	3.71	22.85	8.11	219.08	.00	.74	1.06	1.500	.000	.00	0 .0
13.802	.5807					.5278	7.28	.22	10.31	.22	.013	.00	.00	PIPE
10114.940	218.768	.228	218.996	3.71	21.79	7.37	226.37	.00	.74	1.08	1.500	.000	.00	0 .0
5.521	.5807					.4608	2.54	.23	9.66	.22	.013	.00	.00	PIPE
10120.460	221.973	.236	222.210	3.71	20.77	6.70	228.91	.00	.74	1.09	1.500	.000	.00	0 .0
3.376	.5807					.4026	1.36	.24	9.05	.22	.013	.00	.00	PIPE
10123.830	223.934	.244	224.178	3.71	19.81	6.09	230.27	.00	.74	1.11	1.500	.000	.00	0 .0
2.382	.5807					.3516	.84	.24	8.49	.22	.013	.00	.00	PIPE
10126.220	225.317	.252	225.569	3.71	18.88	5.54	231.11	.00	.74	1.12	1.500	.000	.00	0 .0
1.808	.5807					.3072	.56	.25	7.95	.22	.013	.00	.00	PIPE
10128.020	226.367	.261	226.628	3.71	18.01	5.03	231.66	.00	.74	1.14	1.500	.000	.00	0 .0
1.439	.5807					.2682	.39	.26	7.46	.22	.013	.00	.00	PIPE
10129.460	227.202	.269	227.471	3.71	17.17	4.58	232.05	.00	.74	1.15	1.500	.000	.00	0 .0
1.174	.5807					.2340	.27	.27	6.98	.22	.013	.00	.00	PIPE
10130.640	227.884	.278	228.162	3.71	16.37	4.16	232.32	.00	.74	1.17	1.500	.000	.00	0 .0
.979	.5807					.2046	.20	.28	6.54	.22	.013	.00	.00	PIPE
10131.620	228.452	.288	228.741	3.71	15.61	3.78	232.52	.00	.74	1.18	1.500	.000	.00	0 .0
.831	.5807					.1789	.15	.29	6.13	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10132.450	228.935	.298	229.233	3.71	14.88	3.44	232.67	.00	.74	1.20	1.500	.000	.00	0 .0
.713	.5807					.1564	.11	.30	5.75	.22	.013	.00	.00	PIPE
10133.160	229.349	.308	229.657	3.71	14.19	3.13	232.78	.00	.74	1.21	1.500	.000	.00	0 .0
.617	.5807					.1366	.08	.31	5.38	.22	.013	.00	.00	PIPE
10133.780	229.707	.318	230.026	3.71	13.53	2.84	232.87	.00	.74	1.23	1.500	.000	.00	0 .0
.536	.5807					.1193	.06	.32	5.04	.22	.013	.00	.00	PIPE
10134.310	230.019	.329	230.348	3.71	12.90	2.58	232.93	.00	.74	1.24	1.500	.000	.00	0 .0
.470	.5807					.1043	.05	.33	4.72	.22	.013	.00	.00	PIPE
10134.780	230.292	.340	230.632	3.71	12.30	2.35	232.98	.00	.74	1.26	1.500	.000	.00	0 .0
.411	.5807					.0912	.04	.34	4.42	.22	.013	.00	.00	PIPE
10135.190	230.531	.352	230.883	3.71	11.73	2.13	233.02	.00	.74	1.27	1.500	.000	.00	0 .0
.363	.5807					.0797	.03	.35	4.14	.22	.013	.00	.00	PIPE
10135.560	230.742	.364	231.106	3.71	11.18	1.94	233.05	.00	.74	1.29	1.500	.000	.00	0 .0
.322	.5807					.0697	.02	.36	3.88	.22	.013	.00	.00	PIPE
10135.880	230.928	.376	231.305	3.71	10.66	1.76	233.07	.00	.74	1.30	1.500	.000	.00	0 .0
.283	.5807					.0609	.02	.38	3.63	.22	.013	.00	.00	PIPE
10136.160	231.093	.389	231.482	3.71	10.16	1.60	233.09	.00	.74	1.31	1.500	.000	.00	0 .0
.250	.5807					.0533	.01	.39	3.40	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10136.410	231.238	.403	231.641	3.71	9.69	1.46	233.10	.00	.74	1.33	1.500	.000	.00	0 .0
.222	.5807					.0467	.01	.40	3.18	.22	.013	.00	.00	PIPE
10136.630	231.367	.417	231.784	3.71	9.24	1.33	233.11	.00	.74	1.34	1.500	.000	.00	0 .0
.197	.5807					.0408	.01	.42	2.98	.22	.013	.00	.00	PIPE
10136.830	231.482	.431	231.913	3.71	8.81	1.21	233.12	.00	.74	1.36	1.500	.000	.00	0 .0
.174	.5807					.0357	.01	.43	2.79	.22	.013	.00	.00	PIPE
10137.000	231.583	.446	232.029	3.71	8.40	1.10	233.12	.00	.74	1.37	1.500	.000	.00	0 .0
.152	.5807					.0313	.00	.45	2.61	.22	.013	.00	.00	PIPE
10137.160	231.671	.462	232.133	3.71	8.01	1.00	233.13	.00	.74	1.39	1.500	.000	.00	0 .0
.135	.5807					.0274	.00	.46	2.44	.22	.013	.00	.00	PIPE
10137.290	231.749	.478	232.227	3.71	7.64	.91	233.13	.00	.74	1.40	1.500	.000	.00	0 .0
.117	.5807					.0240	.00	.48	2.28	.22	.013	.00	.00	PIPE
10137.410	231.817	.495	232.312	3.71	7.28	.82	233.14	.00	.74	1.41	1.500	.000	.00	0 .0
.102	.5807					.0210	.00	.50	2.13	.22	.013	.00	.00	PIPE
10137.510	231.876	.513	232.389	3.71	6.94	.75	233.14	.00	.74	1.42	1.500	.000	.00	0 .0
.089	.5807					.0184	.00	.51	2.00	.22	.013	.00	.00	PIPE
10137.600	231.928	.531	232.459	3.71	6.62	.68	233.14	.00	.74	1.43	1.500	.000	.00	0 .0
.076	.5807					.0162	.00	.53	1.87	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10137.680	231.972	.550	232.522	3.71	6.31	.62	233.14	.00	.74	1.45	1.500	.000	.00	0 .0
.063	.5807					.0142	.00	.55	1.74	.22	.013	.00	.00	PIPE
10137.740	232.009	.570	232.579	3.71	6.02	.56	233.14	.00	.74	1.46	1.500	.000	.00	0 .0
.055	.5807					.0124	.00	.57	1.63	.22	.013	.00	.00	PIPE
10137.790	232.041	.590	232.631	3.71	5.74	.51	233.14	.00	.74	1.47	1.500	.000	.00	0 .0
.043	.5807					.0109	.00	.59	1.52	.22	.013	.00	.00	PIPE
10137.840	232.066	.612	232.678	3.71	5.47	.46	233.14	.00	.74	1.47	1.500	.000	.00	0 .0
.035	.5807					.0096	.00	.61	1.42	.22	.013	.00	.00	PIPE
10137.870	232.086	.634	232.720	3.71	5.22	.42	233.14	.00	.74	1.48	1.500	.000	.00	0 .0
.025	.5807					.0084	.00	.63	1.33	.22	.013	.00	.00	PIPE
10137.900	232.101	.658	232.759	3.71	4.97	.38	233.14	.00	.74	1.49	1.500	.000	.00	0 .0
.019	.5807					.0074	.00	.66	1.24	.22	.013	.00	.00	PIPE
10137.920	232.112	.682	232.794	3.71	4.74	.35	233.14	.00	.74	1.49	1.500	.000	.00	0 .0
.010	.5807					.0065	.00	.68	1.15	.22	.013	.00	.00	PIPE
10137.930	232.118	.708	232.826	3.71	4.52	.32	233.14	.00	.74	1.50	1.500	.000	.00	0 .0
.004	.5807					.0057	.00	.71	1.08	.22	.013	.00	.00	PIPE
10137.930	232.120	.736	232.856	3.71	4.30	.29	233.14	.00	.74	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10137.930	232.120	1.139	233.259	3.71	.81	.01	233.27	.00	.30	4.00	6.000	4.000	.00	0 .0
.631	.0825					.0001	.00	1.14	.13	.12	.013	.00	.00	BOX
10138.560	232.172	1.086	233.258	3.71	.85	.01	233.27	.00	.30	4.00	6.000	4.000	.00	0 .0
.600	.0825					.0001	.00	1.09	.14	.12	.013	.00	.00	BOX
10139.160	232.221	1.035	233.257	3.71	.90	.01	233.27	.00	.30	4.00	6.000	4.000	.00	0 .0
.569	.0825					.0001	.00	1.04	.16	.12	.013	.00	.00	BOX
10139.730	232.268	.987	233.256	3.71	.94	.01	233.27	.00	.30	4.00	6.000	4.000	.00	0 .0
.163	.0825					.0001	.00	.99	.17	.12	.013	.00	.00	BOX
10139.890	232.282	.974	233.256	3.71	.95	.01	233.27	.00	.30	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10139.890	232.282	.053	232.335	3.71	17.58	4.80	237.13	.00	.30	4.00	6.000	4.000	.00	0 .0
.113	.0825					1.2377	.14	.05	13.49	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.23767														
10140.010	232.291	.053	232.344	3.71	17.58	4.80	237.14	.00	.30	4.00	6.000	4.000	.00	0 .0
.379	.0825					1.3431	.51	.05	13.49	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.34306														
10140.380	232.322	.050	232.373	3.71	18.44	5.28	237.65	.00	.30	4.00	6.000	4.000	.00	0 .0
.353	.0825					1.5718	.55	.05	14.49	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.57183														
10140.740	232.352	.048	232.400	3.71	19.34	5.81	238.21	.00	.30	4.00	6.000	4.000	.00	0 .0
.329	.0825					1.8397	.61	.05	15.56	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.83971														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10141.070	232.379	.046	232.424	3.71	20.28	6.39	238.81	.00	.30	4.00	6.000	4.000	.00	0 .0
.308	.0825					2.1534	.66	.05	16.71	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.15338														
10141.370	232.404	.044	232.448	3.71	21.27	7.03	239.47	.00	.30	4.00	6.000	4.000	.00	0 .0
.287	.0825					2.5207	.72	.04	17.95	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.52070														
10141.660	232.428	.042	232.469	3.71	22.31	7.73	240.20	.00	.30	4.00	6.000	4.000	.00	0 .0
.269	.0825					2.9509	.79	.04	19.28	.12	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.95086														
10141.930	232.450	.040	232.490	3.71	23.40	8.50	240.99	.00	.30	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10141.930	232.450	.218	232.668	3.71	23.30	8.43	241.10	.00	.74	1.06	1.500	.000	.00	0 .0
9.785	.6173					.5803	5.68	.22	10.59	.22	.013	.00	.00	PIPE
10151.710	238.490	.221	238.711	3.71	22.85	8.11	246.82	.00	.74	1.06	1.500	.000	.00	0 .0
8.158	.6173					.5278	4.31	.22	10.31	.22	.013	.00	.00	PIPE
10159.870	243.526	.228	243.754	3.71	21.79	7.37	251.12	.00	.74	1.08	1.500	.000	.00	0 .0
4.230	.6173					.4608	1.95	.23	9.66	.22	.013	.00	.00	PIPE
10164.100	246.137	.236	246.373	3.71	20.77	6.70	253.07	.00	.74	1.09	1.500	.000	.00	0 .0
2.801	.6173					.4026	1.13	.24	9.05	.22	.013	.00	.00	PIPE
10166.900	247.866	.244	248.110	3.71	19.81	6.09	254.20	.00	.74	1.11	1.500	.000	.00	0 .0
2.054	.6173					.3516	.72	.24	8.49	.22	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 3A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10168.960	249.134	.252	249.386	3.71	18.88	5.54	254.92	.00	.74	1.12	1.500	.000	.00	0 .0
1.594	.6173					.3072	.49	.25	7.95	.22	.013	.00	.00	PIPE
10170.550	250.118	.261	250.379	3.71	18.01	5.03	255.41	.00	.74	1.14	1.500	.000	.00	0 .0
1.288	.6173					.2682	.35	.26	7.46	.22	.013	.00	.00	PIPE
10171.840	250.913	.269	251.182	3.71	17.17	4.58	255.76	.00	.74	1.15	1.500	.000	.00	0 .0
1.063	.6173					.2340	.25	.27	6.98	.22	.013	.00	.00	PIPE
10172.900	251.568	.278	251.846	3.71	16.37	4.16	256.01	.00	.74	1.17	1.500	.000	.00	0 .0
.893	.6173					.2046	.18	.28	6.54	.22	.013	.00	.00	PIPE
10173.790	252.119	.288	252.407	3.71	15.61	3.78	256.19	.00	.74	1.18	1.500	.000	.00	0 .0
.762	.6173					.1789	.14	.29	6.13	.22	.013	.00	.00	PIPE
10174.560	252.589	.298	252.887	3.71	14.88	3.44	256.33	.00	.74	1.20	1.500	.000	.00	0 .0
.656	.6173					.1564	.10	.30	5.75	.22	.013	.00	.00	PIPE
10175.210	252.994	.308	253.302	3.71	14.19	3.13	256.43	.00	.74	1.21	1.500	.000	.00	0 .0
.570	.6173					.1366	.08	.31	5.38	.22	.013	.00	.00	PIPE
10175.780	253.346	.318	253.665	3.71	13.53	2.84	256.51	.00	.74	1.23	1.500	.000	.00	0 .0
.497	.6173					.1193	.06	.32	5.04	.22	.013	.00	.00	PIPE
10176.280	253.653	.329	253.982	3.71	12.90	2.58	256.57	.00	.74	1.24	1.500	.000	.00	0 .0
.437	.6173					.1043	.05	.33	4.72	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10176.720	253.922	.340	254.262	3.71	12.30	2.35	256.61	.00	.74	1.26	1.500	.000	.00	0 .0
.383	.6173					.0912	.03	.34	4.42	.22	.013	.00	.00	PIPE
10177.100	254.159	.352	254.511	3.71	11.73	2.13	256.65	.00	.74	1.27	1.500	.000	.00	0 .0
.339	.6173					.0797	.03	.35	4.14	.22	.013	.00	.00	PIPE
10177.440	254.368	.364	254.732	3.71	11.18	1.94	256.67	.00	.74	1.29	1.500	.000	.00	0 .0
.301	.6173					.0697	.02	.36	3.88	.22	.013	.00	.00	PIPE
10177.740	254.553	.376	254.929	3.71	10.66	1.76	256.69	.00	.74	1.30	1.500	.000	.00	0 .0
.265	.6173					.0609	.02	.38	3.63	.22	.013	.00	.00	PIPE
10178.000	254.717	.389	255.106	3.71	10.16	1.60	256.71	.00	.74	1.31	1.500	.000	.00	0 .0
.233	.6173					.0533	.01	.39	3.40	.22	.013	.00	.00	PIPE
10178.240	254.861	.403	255.264	3.71	9.69	1.46	256.72	.00	.74	1.33	1.500	.000	.00	0 .0
.208	.6173					.0467	.01	.40	3.18	.22	.013	.00	.00	PIPE
10178.440	254.989	.417	255.406	3.71	9.24	1.33	256.73	.00	.74	1.34	1.500	.000	.00	0 .0
.185	.6173					.0408	.01	.42	2.98	.22	.013	.00	.00	PIPE
10178.630	255.103	.431	255.534	3.71	8.81	1.21	256.74	.00	.74	1.36	1.500	.000	.00	0 .0
.162	.6173					.0357	.01	.43	2.79	.22	.013	.00	.00	PIPE
10178.790	255.204	.446	255.650	3.71	8.40	1.10	256.75	.00	.74	1.37	1.500	.000	.00	0 .0
.143	.6173					.0313	.00	.45	2.61	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10178.930	255.292	.462	255.754	3.71	8.01	1.00	256.75	.00	.74	1.39	1.500	.000	.00	0 .0
.126	.6173					.0274	.00	.46	2.44	.22	.013	.00	.00	PIPE
10179.060	255.370	.478	255.848	3.71	7.64	.91	256.75	.00	.74	1.40	1.500	.000	.00	0 .0
.110	.6173					.0240	.00	.48	2.28	.22	.013	.00	.00	PIPE
10179.170	255.438	.495	255.933	3.71	7.28	.82	256.76	.00	.74	1.41	1.500	.000	.00	0 .0
.096	.6173					.0210	.00	.50	2.13	.22	.013	.00	.00	PIPE
10179.270	255.497	.513	256.010	3.71	6.94	.75	256.76	.00	.74	1.42	1.500	.000	.00	0 .0
.084	.6173					.0184	.00	.51	2.00	.22	.013	.00	.00	PIPE
10179.350	255.548	.531	256.079	3.71	6.62	.68	256.76	.00	.74	1.43	1.500	.000	.00	0 .0
.071	.6173					.0162	.00	.53	1.87	.22	.013	.00	.00	PIPE
10179.420	255.592	.550	256.142	3.71	6.31	.62	256.76	.00	.74	1.45	1.500	.000	.00	0 .0
.060	.6173					.0142	.00	.55	1.74	.22	.013	.00	.00	PIPE
10179.480	255.629	.570	256.199	3.71	6.02	.56	256.76	.00	.74	1.46	1.500	.000	.00	0 .0
.052	.6173					.0124	.00	.57	1.63	.22	.013	.00	.00	PIPE
10179.530	255.661	.590	256.251	3.71	5.74	.51	256.76	.00	.74	1.47	1.500	.000	.00	0 .0
.040	.6173					.0109	.00	.59	1.52	.22	.013	.00	.00	PIPE
10179.570	255.686	.612	256.298	3.71	5.47	.46	256.76	.00	.74	1.47	1.500	.000	.00	0 .0
.033	.6173					.0096	.00	.61	1.42	.22	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10179.610	255.706	.634	256.340	3.71	5.22	.42	256.76	.00	.74	1.48	1.500	.000	.00	0 .0
.023	.6173					.0084	.00	.63	1.33	.22	.013	.00	.00	PIPE
10179.630	255.721	.658	256.379	3.71	4.97	.38	256.76	.00	.74	1.49	1.500	.000	.00	0 .0
.018	.6173					.0074	.00	.66	1.24	.22	.013	.00	.00	PIPE
10179.650	255.732	.682	256.414	3.71	4.74	.35	256.76	.00	.74	1.49	1.500	.000	.00	0 .0
.010	.6173					.0065	.00	.68	1.15	.22	.013	.00	.00	PIPE
10179.660	255.738	.708	256.446	3.71	4.52	.32	256.76	.00	.74	1.50	1.500	.000	.00	0 .0
.004	.6173					.0057	.00	.71	1.08	.22	.013	.00	.00	PIPE
10179.660	255.740	.736	256.476	3.71	4.30	.29	256.76	.00	.74	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													
10179.660	255.740	1.139	256.879	3.71	.81	.01	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.552	.0943					.0001	.00	1.14	.13	.12	.013	.00	.00	BOX
10180.210	255.792	1.086	256.878	3.71	.85	.01	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.524	.0943					.0001	.00	1.09	.14	.12	.013	.00	.00	BOX
10180.740	255.841	1.035	256.877	3.71	.90	.01	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.498	.0943					.0001	.00	1.04	.16	.12	.013	.00	.00	BOX
10181.230	255.888	.987	256.876	3.71	.94	.01	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.474	.0943					.0001	.00	.99	.17	.12	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 2- 9-2015 Time: 2: 4:57

MAPLE CANYON
SYSTEM 3A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10181.710	255.933	.941	256.874	3.71	.99	.02	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.449	.0943					.0001	.00	.94	.18	.12	.013	.00	.00	BOX
10182.160	255.975	.897	256.873	3.71	1.03	.02	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.426	.0943					.0002	.00	.90	.19	.12	.013	.00	.00	BOX
10182.580	256.016	.856	256.871	3.71	1.08	.02	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.403	.0943					.0002	.00	.86	.21	.12	.013	.00	.00	BOX
10182.990	256.054	.816	256.869	3.71	1.14	.02	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0
.173	.0943					.0002	.00	.82	.22	.12	.013	.00	.00	BOX
10183.160	256.070	.799	256.869	3.71	1.16	.02	256.89	.00	.30	4.00	6.000	4.000	.00	0 .0

System 3A

Q =	3.71	cfs
V =	15.48	ft/sec
D =	0.29	ft
A =	0.239664	ft^2
Ye =	0.346168	ft
g =	32.2	ft/sec^2
Fr =	4.636602	
From Figure 7-2		
Ho =	4.010969	
HLoss/Ho	0.65	
HLoss =	2.60713	
Remaining Energy	1.403839	
Area Above Sill		
Height	0.3	ft
Width	3.5	ft
Area Above Sill	1.05	in
Depth of Sill	0.916667	ft
Total Depth =	1.216667	ft
Velocity	3.533333	ft/sec
TH	1.410524	OK

Figure 7-2

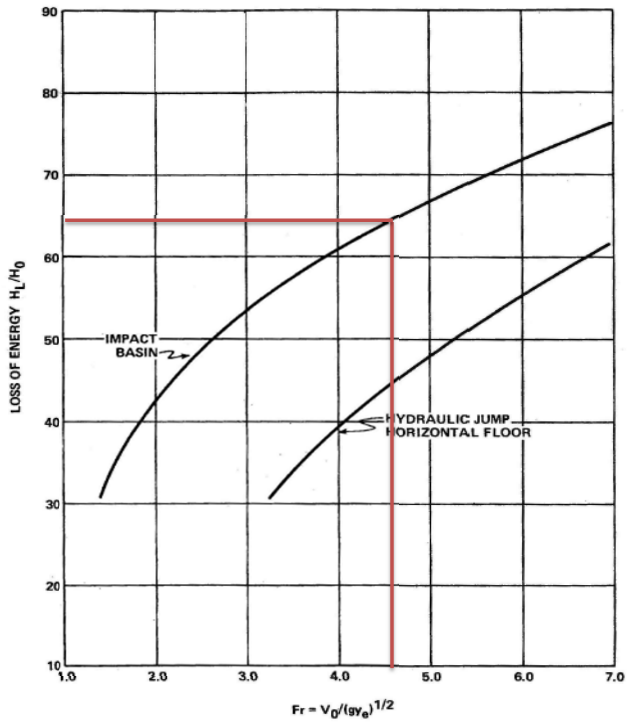


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 4
(3RD & QUINCE)

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Worksheet for 4 Existing

Project Description

Solve For	Spread

Input Data

Discharge		3.30	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		3.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread	10.56	ft
Depth	3.56	in
Gutter Depression	1.02	in
Total Depression	5.02	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

System 4 Upgrade - Type A Inlet in Sag Condition

Project Description

Solve For	Spread

Input Data

Discharge		3.30	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		3.00	%
Road Cross Slope		3.00	%
Curb Opening Length		9.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		0.00	in
Local Depression Width		0.00	ft
Throat Incline Angle		90.00	degrees

Results

Spread	8.21	ft
Depth	2.96	in
Gutter Depression	0.00	in
Total Depression	0.00	in

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10034.950	198.170	.253	198.423	3.30	16.76	4.36	202.78	.00	.69	1.12	1.500	.000	.00	0 .0
.128	.0121					.2578	.03	.25	7.05	.55	.013	.00	.00	PIPE
10035.080	198.172	.252	198.424	3.30	16.77	4.37	202.79	.00	.69	1.12	1.500	.000	.00	0 .0
1.621	.0121					.2765	.45	.25	7.05	.55	.013	.00	.00	PIPE
10036.700	198.191	.244	198.435	3.30	17.59	4.80	203.24	.00	.69	1.11	1.500	.000	.00	0 .0
1.551	.0121					.3170	.49	.24	7.53	.55	.013	.00	.00	PIPE
10038.250	198.210	.237	198.447	3.30	18.44	5.28	203.73	.00	.69	1.09	1.500	.000	.00	0 .0
1.590	.4302					.3319	.53	.24	8.04	.22	.013	.00	.00	PIPE
10039.840	198.894	.239	199.133	3.30	18.18	5.13	204.27	.00	.69	1.10	1.500	.000	.00	0 .0
3.649	.4302					.3046	1.11	.24	7.88	.22	.013	.00	.00	PIPE
10043.490	200.464	.247	200.711	3.30	17.34	4.67	205.38	.00	.69	1.11	1.500	.000	.00	0 .0
2.532	.4302					.2659	.67	.25	7.39	.22	.013	.00	.00	PIPE
10046.020	201.554	.255	201.809	3.30	16.53	4.24	206.05	.00	.69	1.13	1.500	.000	.00	0 .0
1.904	.4302					.2319	.44	.26	6.92	.22	.013	.00	.00	PIPE
10047.930	202.373	.263	202.636	3.30	15.76	3.86	206.49	.00	.69	1.14	1.500	.000	.00	0 .0
1.500	.4302					.2024	.30	.26	6.48	.22	.013	.00	.00	PIPE
10049.430	203.018	.272	203.290	3.30	15.03	3.51	206.80	.00	.69	1.16	1.500	.000	.00	0 .0
1.220	.4302					.1770	.22	.27	6.08	.22	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10050.650	203.543	.282	203.825	3.30	14.33	3.19	207.01	.00	.69	1.17	1.500	.000	.00	0 .0
1.020	.4302				.1548	.16	.28	5.70	.22	.013		.00	.00	PIPE
10051.670	203.981	.291	204.272	3.30	13.66	2.90	207.17	.00	.69	1.19	1.500	.000	.00	0 .0
.858	.4302				.1351	.12	.29	5.33	.22	.013		.00	.00	PIPE
10052.520	204.351	.301	204.652	3.30	13.02	2.63	207.29	.00	.69	1.20	1.500	.000	.00	0 .0
.735	.4302				.1181	.09	.30	5.00	.22	.013		.00	.00	PIPE
10053.260	204.667	.311	204.978	3.30	12.42	2.39	207.37	.00	.69	1.22	1.500	.000	.00	0 .0
.632	.4302				.1032	.07	.31	4.68	.22	.013		.00	.00	PIPE
10053.890	204.939	.322	205.261	3.30	11.84	2.18	207.44	.00	.69	1.23	1.500	.000	.00	0 .0
.550	.4302				.0903	.05	.32	4.39	.22	.013		.00	.00	PIPE
10054.440	205.175	.333	205.508	3.30	11.29	1.98	207.49	.00	.69	1.25	1.500	.000	.00	0 .0
.480	.4302				.0789	.04	.33	4.11	.22	.013		.00	.00	PIPE
10054.920	205.382	.344	205.726	3.30	10.76	1.80	207.53	.00	.69	1.26	1.500	.000	.00	0 .0
.420	.4302				.0689	.03	.34	3.85	.22	.013		.00	.00	PIPE
10055.340	205.563	.356	205.919	3.30	10.26	1.64	207.55	.00	.69	1.28	1.500	.000	.00	0 .0
.369	.4302				.0603	.02	.36	3.60	.22	.013		.00	.00	PIPE
10055.710	205.721	.368	206.090	3.30	9.79	1.49	207.58	.00	.69	1.29	1.500	.000	.00	0 .0
.323	.4302				.0527	.02	.37	3.37	.22	.013		.00	.00	PIPE

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10056.030	205.861	.381	206.242	3.30	9.33	1.35	207.59	.00	.69	1.31	1.500	.000	.00	0 .0
.286	.4302				.0461	.01	.38	3.16	.22	.013		.00	.00	PIPE
10056.320	205.984	.394	206.378	3.30	8.90	1.23	207.61	.00	.69	1.32	1.500	.000	.00	0 .0
.251	.4302				.0404	.01	.39	2.96	.22	.013		.00	.00	PIPE
10056.570	206.092	.408	206.500	3.30	8.48	1.12	207.62	.00	.69	1.34	1.500	.000	.00	0 .0
.222	.4302				.0353	.01	.41	2.77	.22	.013		.00	.00	PIPE
10056.790	206.187	.422	206.609	3.30	8.09	1.02	207.62	.00	.69	1.35	1.500	.000	.00	0 .0
.196	.4302				.0309	.01	.42	2.59	.22	.013		.00	.00	PIPE
10056.990	206.271	.436	206.707	3.30	7.71	.92	207.63	.00	.69	1.36	1.500	.000	.00	0 .0
.169	.4302				.0270	.00	.44	2.42	.22	.013		.00	.00	PIPE
10057.160	206.344	.452	206.796	3.30	7.35	.84	207.64	.00	.69	1.38	1.500	.000	.00	0 .0
.148	.4302				.0237	.00	.45	2.27	.22	.013		.00	.00	PIPE
10057.310	206.408	.468	206.876	3.30	7.01	.76	207.64	.00	.69	1.39	1.500	.000	.00	0 .0
.130	.4302				.0207	.00	.47	2.12	.22	.013		.00	.00	PIPE
10057.440	206.464	.484	206.948	3.30	6.68	.69	207.64	.00	.69	1.40	1.500	.000	.00	0 .0
.111	.4302				.0182	.00	.48	1.99	.22	.013		.00	.00	PIPE
10057.550	206.512	.501	207.013	3.30	6.37	.63	207.64	.00	.69	1.41	1.500	.000	.00	0 .0
.095	.4302				.0159	.00	.50	1.86	.22	.013		.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10057.640	206.553	.519	207.072	3.30	6.08	.57	207.64	.00	.69	1.43	1.500	.000	.00	0 .0
.082	.4302					.0139	.00	.52	1.74	.22	.013	.00	.00	PIPE
10057.720	206.588	.537	207.125	3.30	5.79	.52	207.65	.00	.69	1.44	1.500	.000	.00	0 .0
.065	.4302					.0122	.00	.54	1.62	.22	.013	.00	.00	PIPE
10057.790	206.616	.557	207.173	3.30	5.52	.47	207.65	.00	.69	1.45	1.500	.000	.00	0 .0
.055	.4302					.0107	.00	.56	1.52	.22	.013	.00	.00	PIPE
10057.840	206.640	.577	207.217	3.30	5.27	.43	207.65	.00	.69	1.46	1.500	.000	.00	0 .0
.043	.4302					.0094	.00	.58	1.42	.22	.013	.00	.00	PIPE
10057.890	206.658	.598	207.256	3.30	5.02	.39	207.65	.00	.69	1.47	1.500	.000	.00	0 .0
.034	.4302					.0083	.00	.60	1.32	.22	.013	.00	.00	PIPE
10057.920	206.673	.619	207.292	3.30	4.79	.36	207.65	.00	.69	1.48	1.500	.000	.00	0 .0
.022	.4302					.0072	.00	.62	1.24	.22	.013	.00	.00	PIPE
10057.940	206.683	.642	207.325	3.30	4.56	.32	207.65	.00	.69	1.48	1.500	.000	.00	0 .0
.013	.4302					.0064	.00	.64	1.15	.22	.013	.00	.00	PIPE
10057.960	206.688	.666	207.354	3.30	4.35	.29	207.65	.00	.69	1.49	1.500	.000	.00	0 .0
.004	.4302					.0056	.00	.67	1.08	.22	.013	.00	.00	PIPE
10057.960	206.690	.692	207.382	3.30	4.14	.27	207.65	.00	.69	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10057.960	206.690	1.065	207.755	3.30	.77	.01	207.76	.00	.28	4.00	6.000	4.000	.00	0 .0
.572	.0850					.0001	.00	1.07	.13	.11	.013	.00	.00	BOX
10058.530	206.739	1.015	207.754	3.30	.81	.01	207.76	.00	.28	4.00	6.000	4.000	.00	0 .0
.545	.0850					.0001	.00	1.02	.14	.11	.013	.00	.00	BOX
10059.080	206.785	.968	207.753	3.30	.85	.01	207.76	.00	.28	4.00	6.000	4.000	.00	0 .0
.518	.0850					.0001	.00	.97	.15	.11	.013	.00	.00	BOX
10059.590	206.829	.923	207.752	3.30	.89	.01	207.76	.00	.28	4.00	6.000	4.000	.00	0 .0
.344	.0850					.0001	.00	.92	.16	.11	.013	.00	.00	BOX
10059.940	206.858	.880	207.738	3.30	.94	.01	207.75	.00	.28	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10059.940	206.858	.050	206.909	3.30	16.36	4.16	211.06	.00	.28	4.00	6.000	4.000	.00	0 .0
.319	.0850					1.2333	.39	.05	12.84	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.23331														
10060.260	206.885	.048	206.933	3.30	17.16	4.57	211.50	.00	.28	4.00	6.000	4.000	.00	0 .0
.335	.0850					1.4435	.48	.05	13.79	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.44349														
10060.590	206.914	.046	206.960	3.30	18.00	5.03	211.99	.00	.28	4.00	6.000	4.000	.00	0 .0
.313	.0850					1.6896	.53	.05	14.81	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.68960														
10060.910	206.940	.044	206.984	3.30	18.87	5.53	212.52	.00	.28	4.00	6.000	4.000	.00	0 .0
.291	.0850					1.9778	.58	.04	15.91	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.97781														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10061.200	206.965	.042	207.007	3.30	19.80	6.08	213.09	.00	.28	4.00	6.000	4.000	.00	0 .0
.271	.0850					2.3153	.63	.04	17.09	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.31531														
10061.470	206.988	.040	207.028	3.30	20.76	6.69	213.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.254	.0850					2.7106	.69	.04	18.35	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.71057														
10061.720	207.010	.038	207.048	3.30	21.77	7.36	214.41	.00	.28	4.00	6.000	4.000	.00	0 .0
.238	.0850					3.1735	.76	.04	19.71	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 3.17348														
10061.960	207.030	.036	207.066	3.30	22.84	8.10	215.16	.00	.28	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10061.960	207.030	.205	207.235	3.30	22.73	8.02	215.25	.00	.69	1.03	1.500	.000	.00	0 .0
6.775	.6672					.5862	3.97	.21	10.67	.20	.013	.00	.00	PIPE
10068.730	211.550	.209	211.760	3.30	22.00	7.52	219.27	.00	.69	1.04	1.500	.000	.00	0 .0
4.694	.6672					.5231	2.46	.21	10.20	.20	.013	.00	.00	PIPE
10073.430	214.682	.216	214.898	3.30	20.98	6.83	221.73	.00	.69	1.05	1.500	.000	.00	0 .0
2.916	.6672					.4566	1.33	.22	9.57	.20	.013	.00	.00	PIPE
10076.340	216.628	.223	216.851	3.30	20.00	6.21	223.06	.00	.69	1.07	1.500	.000	.00	0 .0
2.074	.6672					.3988	.83	.22	8.96	.20	.013	.00	.00	PIPE
10078.420	218.011	.231	218.242	3.30	19.07	5.65	223.89	.00	.69	1.08	1.500	.000	.00	0 .0
1.586	.6672					.3486	.55	.23	8.41	.20	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10080.000	219.070	.239	219.309	3.30	18.18	5.13	224.44	.00	.69	1.10	1.500	.000	.00	0 .0
1.265	.6672				.3046	.39	.24	7.88	.20	.013		.00	.00	PIPE
10081.270	219.914	.247	220.161	3.30	17.34	4.67	224.83	.00	.69	1.11	1.500	.000	.00	0 .0
1.037	.6672				.2659	.28	.25	7.39	.20	.013		.00	.00	PIPE
10082.310	220.605	.255	220.861	3.30	16.53	4.24	225.10	.00	.69	1.13	1.500	.000	.00	0 .0
.867	.6672				.2319	.20	.26	6.92	.20	.013		.00	.00	PIPE
10083.170	221.184	.263	221.447	3.30	15.76	3.86	225.30	.00	.69	1.14	1.500	.000	.00	0 .0
.735	.6672				.2024	.15	.26	6.48	.20	.013		.00	.00	PIPE
10083.910	221.675	.272	221.947	3.30	15.03	3.51	225.45	.00	.69	1.16	1.500	.000	.00	0 .0
.630	.6672				.1770	.11	.27	6.08	.20	.013		.00	.00	PIPE
10084.540	222.095	.282	222.377	3.30	14.33	3.19	225.56	.00	.69	1.17	1.500	.000	.00	0 .0
.548	.6672				.1548	.08	.28	5.70	.20	.013		.00	.00	PIPE
10085.090	222.461	.291	222.752	3.30	13.66	2.90	225.65	.00	.69	1.19	1.500	.000	.00	0 .0
.477	.6672				.1351	.06	.29	5.33	.20	.013		.00	.00	PIPE
10085.560	222.778	.301	223.079	3.30	13.02	2.63	225.71	.00	.69	1.20	1.500	.000	.00	0 .0
.418	.6672				.1181	.05	.30	5.00	.20	.013		.00	.00	PIPE
10085.980	223.057	.311	223.368	3.30	12.42	2.39	225.76	.00	.69	1.22	1.500	.000	.00	0 .0
.366	.6672				.1032	.04	.31	4.68	.20	.013		.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) /	Water Elev /	Q (CFS) /	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10086.350	223.302	.322	223.624	3.30	11.84	2.18	225.80	.00	.69	1.23	1.500	.000	.00	0 .0
.324	.6672				.0903	.03	.32	4.39	.20	.013		.00	.00	PIPE
10086.670	223.518	.333	223.851	3.30	11.29	1.98	225.83	.00	.69	1.25	1.500	.000	.00	0 .0
.287	.6672				.0789	.02	.33	4.11	.20	.013		.00	.00	PIPE
10086.960	223.709	.344	224.053	3.30	10.76	1.80	225.85	.00	.69	1.26	1.500	.000	.00	0 .0
.253	.6672				.0689	.02	.34	3.85	.20	.013		.00	.00	PIPE
10087.210	223.878	.356	224.234	3.30	10.26	1.64	225.87	.00	.69	1.28	1.500	.000	.00	0 .0
.226	.6672				.0603	.01	.36	3.60	.20	.013		.00	.00	PIPE
10087.440	224.029	.368	224.397	3.30	9.79	1.49	225.88	.00	.69	1.29	1.500	.000	.00	0 .0
.199	.6672				.0527	.01	.37	3.37	.20	.013		.00	.00	PIPE
10087.640	224.161	.381	224.542	3.30	9.33	1.35	225.89	.00	.69	1.31	1.500	.000	.00	0 .0
.177	.6672				.0461	.01	.38	3.16	.20	.013		.00	.00	PIPE
10087.810	224.279	.394	224.673	3.30	8.90	1.23	225.90	.00	.69	1.32	1.500	.000	.00	0 .0
.156	.6672				.0404	.01	.39	2.96	.20	.013		.00	.00	PIPE
10087.970	224.383	.408	224.791	3.30	8.48	1.12	225.91	.00	.69	1.34	1.500	.000	.00	0 .0
.139	.6672				.0353	.00	.41	2.77	.20	.013		.00	.00	PIPE
10088.110	224.476	.422	224.898	3.30	8.09	1.02	225.91	.00	.69	1.35	1.500	.000	.00	0 .0
.123	.6672				.0309	.00	.42	2.59	.20	.013		.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10088.230	224.558	.436	224.994	3.30	7.71	.92	225.92	.00	.69	1.36	1.500	.000	.00	0 .0
.106	.6672					.0270	.00	.44	2.42	.20	.013	.00	.00	PIPE
10088.340	224.629	.452	225.081	3.30	7.35	.84	225.92	.00	.69	1.38	1.500	.000	.00	0 .0
.094	.6672					.0237	.00	.45	2.27	.20	.013	.00	.00	PIPE
10088.430	224.691	.468	225.159	3.30	7.01	.76	225.92	.00	.69	1.39	1.500	.000	.00	0 .0
.083	.6672					.0207	.00	.47	2.12	.20	.013	.00	.00	PIPE
10088.510	224.746	.484	225.230	3.30	6.68	.69	225.92	.00	.69	1.40	1.500	.000	.00	0 .0
.071	.6672					.0182	.00	.48	1.99	.20	.013	.00	.00	PIPE
10088.580	224.794	.501	225.295	3.30	6.37	.63	225.93	.00	.69	1.41	1.500	.000	.00	0 .0
.061	.6672					.0159	.00	.50	1.86	.20	.013	.00	.00	PIPE
10088.650	224.834	.519	225.353	3.30	6.08	.57	225.93	.00	.69	1.43	1.500	.000	.00	0 .0
.052	.6672					.0139	.00	.52	1.74	.20	.013	.00	.00	PIPE
10088.700	224.869	.537	225.406	3.30	5.79	.52	225.93	.00	.69	1.44	1.500	.000	.00	0 .0
.042	.6672					.0122	.00	.54	1.62	.20	.013	.00	.00	PIPE
10088.740	224.897	.557	225.454	3.30	5.52	.47	225.93	.00	.69	1.45	1.500	.000	.00	0 .0
.035	.6672					.0107	.00	.56	1.52	.20	.013	.00	.00	PIPE
10088.770	224.920	.577	225.497	3.30	5.27	.43	225.93	.00	.69	1.46	1.500	.000	.00	0 .0
.027	.6672					.0094	.00	.58	1.42	.20	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10088.800	224.938	.598	225.537	3.30	5.02	.39	225.93	.00	.69	1.47	1.500	.000	.00	0 .0
.022	.6672					.0083	.00	.60	1.32	.20	.013	.00	.00	PIPE
10088.820	224.953	.619	225.572	3.30	4.79	.36	225.93	.00	.69	1.48	1.500	.000	.00	0 .0
.015	.6672					.0072	.00	.62	1.24	.20	.013	.00	.00	PIPE
10088.840	224.963	.642	225.605	3.30	4.56	.32	225.93	.00	.69	1.48	1.500	.000	.00	0 .0
.008	.6672					.0064	.00	.64	1.15	.20	.013	.00	.00	PIPE
10088.850	224.968	.666	225.634	3.30	4.35	.29	225.93	.00	.69	1.49	1.500	.000	.00	0 .0
.003	.6672					.0056	.00	.67	1.08	.20	.013	.00	.00	PIPE
10088.850	224.970	.692	225.662	3.30	4.14	.27	225.93	.00	.69	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													
10088.850	224.970	1.065	226.035	3.30	.77	.01	226.04	.00	.28	4.00	6.000	4.000	.00	0 .0
.572	.0850					.0001	.00	1.07	.13	.11	.013	.00	.00	BOX
10089.420	225.019	1.015	226.034	3.30	.81	.01	226.04	.00	.28	4.00	6.000	4.000	.00	0 .0
.545	.0850					.0001	.00	1.02	.14	.11	.013	.00	.00	BOX
10089.970	225.065	.968	226.033	3.30	.85	.01	226.04	.00	.28	4.00	6.000	4.000	.00	0 .0
.518	.0850					.0001	.00	.97	.15	.11	.013	.00	.00	BOX
10090.480	225.109	.923	226.032	3.30	.89	.01	226.04	.00	.28	4.00	6.000	4.000	.00	0 .0
.491	.0850					.0001	.00	.92	.16	.11	.013	.00	.00	BOX

MAPLE CANYON
SYSTEM 4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10090.980	225.151	.880	226.031	3.30	.94	.01	226.04	.00	.28	4.00	6.000	4.000	.00	0 .0
.072	.0850					.0001	.00	.88	.18	.11	.013	.00	.00	BOX
10091.050	225.157	.880	226.037	3.30	.94	.01	226.05	.00	.28	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10091.050	225.157	.051	225.208	3.30	16.20	4.08	229.28	.00	.28	4.00	6.000	4.000	.00	0 .0
.210	.0850					1.1007	.23	.05	12.65	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.10068														
10091.260	225.175	.051	225.226	3.30	16.20	4.08	229.30	.00	.28	4.00	6.000	4.000	.00	0 .0
.365	.0850					1.1944	.44	.05	12.65	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.19443														
10091.620	225.206	.049	225.254	3.30	16.99	4.48	229.74	.00	.28	4.00	6.000	4.000	.00	0 .0
.340	.0850					1.3980	.48	.05	13.59	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.39796														
10091.960	225.235	.046	225.281	3.30	17.82	4.93	230.21	.00	.28	4.00	6.000	4.000	.00	0 .0
.316	.0850					1.6363	.52	.05	14.60	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.63629														
10092.280	225.261	.044	225.306	3.30	18.69	5.43	230.73	.00	.28	4.00	6.000	4.000	.00	0 .0
.295	.0850					1.9154	.56	.04	15.68	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.91537														
10092.570	225.287	.042	225.329	3.30	19.60	5.97	231.30	.00	.28	4.00	6.000	4.000	.00	0 .0
.275	.0850					2.2422	.62	.04	16.84	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.24220														
10092.850	225.310	.040	225.350	3.30	20.56	6.56	231.91	.00	.28	4.00	6.000	4.000	.00	0 .0
WALL EXIT														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10092.850	225.310	.219	225.529	3.30	20.62	6.60	232.13	.00	.69	1.06	1.500	.000	.00	0 .0
5.169	.5189				.4452	2.30	.22	9.35	.21	.013		.00	.00	PIPE
10098.020	227.992	.223	228.215	3.30	20.00	6.21	234.43	.00	.69	1.07	1.500	.000	.00	0 .0
4.635	.5189				.3988	1.85	.22	8.96	.21	.013		.00	.00	PIPE
10102.660	230.397	.231	230.628	3.30	19.07	5.65	236.27	.00	.69	1.08	1.500	.000	.00	0 .0
2.968	.5189				.3486	1.03	.23	8.41	.21	.013		.00	.00	PIPE
10105.620	231.937	.239	232.176	3.30	18.18	5.13	237.31	.00	.69	1.10	1.500	.000	.00	0 .0
2.140	.5189				.3046	.65	.24	7.88	.21	.013		.00	.00	PIPE
10107.760	233.047	.247	233.294	3.30	17.34	4.67	237.96	.00	.69	1.11	1.500	.000	.00	0 .0
1.645	.5189				.2659	.44	.25	7.39	.21	.013		.00	.00	PIPE
10109.410	233.900	.255	234.156	3.30	16.53	4.24	238.40	.00	.69	1.13	1.500	.000	.00	0 .0
1.316	.5189				.2319	.31	.26	6.92	.21	.013		.00	.00	PIPE
10110.720	234.583	.263	234.846	3.30	15.76	3.86	238.70	.00	.69	1.14	1.500	.000	.00	0 .0
1.079	.5189				.2024	.22	.26	6.48	.21	.013		.00	.00	PIPE
10111.800	235.143	.272	235.416	3.30	15.03	3.51	238.92	.00	.69	1.16	1.500	.000	.00	0 .0
.903	.5189				.1770	.16	.27	6.08	.21	.013		.00	.00	PIPE
10112.710	235.612	.282	235.894	3.30	14.33	3.19	239.08	.00	.69	1.17	1.500	.000	.00	0 .0
.771	.5189				.1548	.12	.28	5.70	.21	.013		.00	.00	PIPE

MAPLE CANYON
SYSTEM 4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10113.480	236.012	.291	236.303	3.30	13.66	2.90	239.20	.00	.69	1.19	1.500	.000	.00	0 .0
.660	.5189					.1351	.09	.29	5.33	.21	.013	.00	.00	PIPE
10114.140	236.355	.301	236.656	3.30	13.02	2.63	239.29	.00	.69	1.20	1.500	.000	.00	0 .0
.572	.5189					.1181	.07	.30	5.00	.21	.013	.00	.00	PIPE
10114.710	236.652	.311	236.963	3.30	12.42	2.39	239.36	.00	.69	1.22	1.500	.000	.00	0 .0
.497	.5189					.1032	.05	.31	4.68	.21	.013	.00	.00	PIPE
10115.210	236.910	.322	237.232	3.30	11.84	2.18	239.41	.00	.69	1.23	1.500	.000	.00	0 .0
.436	.5189					.0903	.04	.32	4.39	.21	.013	.00	.00	PIPE
10115.640	237.136	.333	237.469	3.30	11.29	1.98	239.45	.00	.69	1.25	1.500	.000	.00	0 .0
.384	.5189					.0789	.03	.33	4.11	.21	.013	.00	.00	PIPE
10116.030	237.335	.344	237.679	3.30	10.76	1.80	239.48	.00	.69	1.26	1.500	.000	.00	0 .0
.337	.5189					.0689	.02	.34	3.85	.21	.013	.00	.00	PIPE
10116.360	237.510	.356	237.866	3.30	10.26	1.64	239.50	.00	.69	1.28	1.500	.000	.00	0 .0
.298	.5189					.0603	.02	.36	3.60	.21	.013	.00	.00	PIPE
10116.660	237.665	.368	238.033	3.30	9.79	1.49	239.52	.00	.69	1.29	1.500	.000	.00	0 .0
.262	.5189					.0527	.01	.37	3.37	.21	.013	.00	.00	PIPE
10116.920	237.801	.381	238.182	3.30	9.33	1.35	239.53	.00	.69	1.31	1.500	.000	.00	0 .0
.232	.5189					.0461	.01	.38	3.16	.21	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10117.160	237.921	.394	238.315	3.30	8.90	1.23	239.54	.00	.69	1.32	1.500	.000	.00	0 .0
.204	.5189				.0404	.01	.39	2.96	.21	.013		.00	.00	PIPE
10117.360	238.027	.408	238.435	3.30	8.48	1.12	239.55	.00	.69	1.34	1.500	.000	.00	0 .0
.181	.5189				.0353	.01	.41	2.77	.21	.013		.00	.00	PIPE
10117.540	238.121	.422	238.543	3.30	8.09	1.02	239.56	.00	.69	1.35	1.500	.000	.00	0 .0
.160	.5189				.0309	.00	.42	2.59	.21	.013		.00	.00	PIPE
10117.700	238.204	.436	238.641	3.30	7.71	.92	239.56	.00	.69	1.36	1.500	.000	.00	0 .0
.138	.5189				.0270	.00	.44	2.42	.21	.013		.00	.00	PIPE
10117.840	238.276	.452	238.728	3.30	7.35	.84	239.57	.00	.69	1.38	1.500	.000	.00	0 .0
.122	.5189				.0237	.00	.45	2.27	.21	.013		.00	.00	PIPE
10117.960	238.339	.468	238.807	3.30	7.01	.76	239.57	.00	.69	1.39	1.500	.000	.00	0 .0
.107	.5189				.0207	.00	.47	2.12	.21	.013		.00	.00	PIPE
10118.070	238.395	.484	238.879	3.30	6.68	.69	239.57	.00	.69	1.40	1.500	.000	.00	0 .0
.092	.5189				.0182	.00	.48	1.99	.21	.013		.00	.00	PIPE
10118.160	238.443	.501	238.944	3.30	6.37	.63	239.57	.00	.69	1.41	1.500	.000	.00	0 .0
.078	.5189				.0159	.00	.50	1.86	.21	.013		.00	.00	PIPE
10118.240	238.483	.519	239.002	3.30	6.08	.57	239.58	.00	.69	1.43	1.500	.000	.00	0 .0
.067	.5189				.0139	.00	.52	1.74	.21	.013		.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
10118.300	238.518	.537	239.055	3.30	5.79	.52	239.58	.00	.69	1.44	1.500	.000	.00	0 .0
.054	.5189					.0122	.00	.54	1.62	.21	.013	.00	.00	PIPE
10118.360	238.546	.557	239.103	3.30	5.52	.47	239.58	.00	.69	1.45	1.500	.000	.00	0 .0
.045	.5189					.0107	.00	.56	1.52	.21	.013	.00	.00	PIPE
10118.400	238.570	.577	239.147	3.30	5.27	.43	239.58	.00	.69	1.46	1.500	.000	.00	0 .0
.035	.5189					.0094	.00	.58	1.42	.21	.013	.00	.00	PIPE
10118.440	238.588	.598	239.186	3.30	5.02	.39	239.58	.00	.69	1.47	1.500	.000	.00	0 .0
.028	.5189					.0083	.00	.60	1.32	.21	.013	.00	.00	PIPE
10118.470	238.603	.619	239.222	3.30	4.79	.36	239.58	.00	.69	1.48	1.500	.000	.00	0 .0
.019	.5189					.0072	.00	.62	1.24	.21	.013	.00	.00	PIPE
10118.490	238.613	.642	239.255	3.30	4.56	.32	239.58	.00	.69	1.48	1.500	.000	.00	0 .0
.011	.5189					.0064	.00	.64	1.15	.21	.013	.00	.00	PIPE
10118.500	238.618	.666	239.284	3.30	4.35	.29	239.58	.00	.69	1.49	1.500	.000	.00	0 .0
.004	.5189					.0056	.00	.67	1.08	.21	.013	.00	.00	PIPE
10118.500	238.620	.692	239.312	3.30	4.14	.27	239.58	.00	.69	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													
10118.500	238.620	1.065	239.685	3.30	.77	.01	239.69	.00	.28	4.00	6.000	4.000	.00	0 .0
.590	.0825					.0001	.00	1.07	.13	.11	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10119.090	238.669	1.015	239.684	3.30	.81	.01	239.69	.00	.28	4.00	6.000	4.000	.00	0 .0
.561	.0825				.0001	.00	1.02	.14	.11	.013	.00	.00		BOX
10119.650	238.715	.968	239.683	3.30	.85	.01	239.69	.00	.28	4.00	6.000	4.000	.00	0 .0
.533	.0825				.0001	.00	.97	.15	.11	.013	.00	.00		BOX
10120.180	238.759	.923	239.682	3.30	.89	.01	239.69	.00	.28	4.00	6.000	4.000	.00	0 .0
.330	.0825				.0001	.00	.92	.16	.11	.013	.00	.00		BOX
10120.510	238.786	.893	239.680	3.30	.92	.01	239.69	.00	.28	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10120.510	238.786	.050	238.837	3.30	16.36	4.16	242.99	.00	.28	4.00	6.000	4.000	.00	0 .0
.287	.0825					1.2333	.35	.05	12.84	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.23331														
10120.800	238.810	.048	238.858	3.30	17.16	4.57	243.43	.00	.28	4.00	6.000	4.000	.00	0 .0
.334	.0825					1.4435	.48	.05	13.79	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.44349														
10121.130	238.837	.046	238.883	3.30	18.00	5.03	243.91	.00	.28	4.00	6.000	4.000	.00	0 .0
.312	.0825					1.6896	.53	.05	14.81	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.68960														
10121.450	238.863	.044	238.907	3.30	18.87	5.53	244.44	.00	.28	4.00	6.000	4.000	.00	0 .0
.291	.0825					1.9778	.58	.04	15.91	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.97781														
10121.740	238.887	.042	238.929	3.30	19.80	6.08	245.01	.00	.28	4.00	6.000	4.000	.00	0 .0
.271	.0825					2.3153	.63	.04	17.09	.11	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.31531														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT or I.D. / X-Fall	Base Wt / ZR	ZL	No Wth Prs/Pip / Type Ch
10122.010	238.909	.040	238.949	3.30	20.76	6.69	245.64	.00	.28	4.00	6.000	4.000	.00	0 .0
.254	.0825				2.7106	.69	.04	18.35	.11	.013	.00	.00		BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.71057														
10122.260	238.930	.038	238.968	3.30	21.77	7.36	246.33	.00	.28	4.00	6.000	4.000	.00	0 .0
.237	.0825				3.1735	.75	.04	19.71	.11	.013	.00	.00		BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 3.17348														
10122.500	238.950	.036	238.986	3.30	22.84	8.10	247.08	.00	.28	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10122.500	238.950	.202	239.152	3.30	23.28	8.41	247.57	.00	.69	1.02	1.500	.000	.00	1 .0
1.257	.7130				.6483	.81	.20	11.02	.20	.013	.00	.00		PIPE
10123.760	239.846	.202	240.048	3.30	23.07	8.27	248.32	.00	.69	1.02	1.500	.000	.00	1 .0
6.529	.7130				.5989	3.91	.20	10.88	.20	.013	.00	.00		PIPE
10130.290	244.502	.209	244.711	3.30	22.00	7.52	252.23	.00	.69	1.04	1.500	.000	.00	1 .0
3.562	.7130				.5231	1.86	.21	10.20	.20	.013	.00	.00		PIPE
10133.850	247.041	.216	247.257	3.30	20.98	6.83	254.09	.00	.69	1.05	1.500	.000	.00	1 .0
2.396	.7130				.4566	1.09	.22	9.57	.20	.013	.00	.00		PIPE
10136.240	248.749	.223	248.972	3.30	20.00	6.21	255.18	.00	.69	1.07	1.500	.000	.00	1 .0
1.771	.7130				.3988	.71	.22	8.96	.20	.013	.00	.00		PIPE
10138.020	250.012	.231	250.243	3.30	19.07	5.65	255.89	.00	.69	1.08	1.500	.000	.00	1 .0
1.387	.7130				.3486	.48	.23	8.41	.20	.013	.00	.00		PIPE

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10139.400	251.001	.239	251.240	3.30	18.18	5.13	256.37	.00	.69	1.10	1.500	.000	.00	1 .0
1.123	.7130					.3046	.34	.24	7.88	.20	.013	.00	.00	PIPE
10140.530	251.802	.247	252.049	3.30	17.34	4.67	256.71	.00	.69	1.11	1.500	.000	.00	1 .0
.931	.7130					.2659	.25	.25	7.39	.20	.013	.00	.00	PIPE
10141.460	252.465	.255	252.720	3.30	16.53	4.24	256.96	.00	.69	1.13	1.500	.000	.00	1 .0
.785	.7130					.2319	.18	.26	6.92	.20	.013	.00	.00	PIPE
10142.240	253.025	.263	253.288	3.30	15.76	3.86	257.14	.00	.69	1.14	1.500	.000	.00	1 .0
.669	.7130					.2024	.14	.26	6.48	.20	.013	.00	.00	PIPE
10142.910	253.502	.272	253.774	3.30	15.03	3.51	257.28	.00	.69	1.16	1.500	.000	.00	1 .0
.576	.7130					.1770	.10	.27	6.08	.20	.013	.00	.00	PIPE
10143.490	253.913	.282	254.195	3.30	14.33	3.19	257.38	.00	.69	1.17	1.500	.000	.00	1 .0
.503	.7130					.1548	.08	.28	5.70	.20	.013	.00	.00	PIPE
10143.990	254.271	.291	254.562	3.30	13.66	2.90	257.46	.00	.69	1.19	1.500	.000	.00	1 .0
.438	.7130					.1351	.06	.29	5.33	.20	.013	.00	.00	PIPE
10144.430	254.584	.301	254.885	3.30	13.02	2.63	257.52	.00	.69	1.20	1.500	.000	.00	1 .0
.386	.7130					.1181	.05	.30	5.00	.20	.013	.00	.00	PIPE
10144.810	254.859	.311	255.170	3.30	12.42	2.39	257.56	.00	.69	1.22	1.500	.000	.00	1 .0
.339	.7130					.1032	.03	.31	4.68	.20	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) /	Water Elev /	Q (CFS) /	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10145.150	255.101	.322	255.423	3.30	11.84	2.18	257.60	.00	.69	1.23	1.500	.000	.00	1 .0
.300	.7130					.0903	.03	.32	4.39	.20	.013	.00	.00	PIPE
10145.450	255.315	.333	255.648	3.30	11.29	1.98	257.63	.00	.69	1.25	1.500	.000	.00	1 .0
.267	.7130					.0789	.02	.33	4.11	.20	.013	.00	.00	PIPE
10145.720	255.505	.344	255.849	3.30	10.76	1.80	257.65	.00	.69	1.26	1.500	.000	.00	1 .0
.235	.7130					.0689	.02	.34	3.85	.20	.013	.00	.00	PIPE
10145.950	255.672	.356	256.028	3.30	10.26	1.64	257.66	.00	.69	1.28	1.500	.000	.00	1 .0
.209	.7130					.0603	.01	.36	3.60	.20	.013	.00	.00	PIPE
10146.160	255.822	.368	256.190	3.30	9.79	1.49	257.68	.00	.69	1.29	1.500	.000	.00	1 .0
.185	.7130					.0527	.01	.37	3.37	.20	.013	.00	.00	PIPE
10146.350	255.954	.381	256.335	3.30	9.33	1.35	257.69	.00	.69	1.31	1.500	.000	.00	1 .0
.165	.7130					.0461	.01	.38	3.16	.20	.013	.00	.00	PIPE
10146.510	256.071	.394	256.465	3.30	8.90	1.23	257.69	.00	.69	1.32	1.500	.000	.00	1 .0
.146	.7130					.0404	.01	.39	2.96	.20	.013	.00	.00	PIPE
10146.660	256.175	.408	256.583	3.30	8.48	1.12	257.70	.00	.69	1.34	1.500	.000	.00	1 .0
.129	.7130					.0353	.00	.41	2.77	.20	.013	.00	.00	PIPE
10146.790	256.267	.422	256.689	3.30	8.09	1.02	257.70	.00	.69	1.35	1.500	.000	.00	1 .0
.115	.7130					.0309	.00	.42	2.59	.20	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10146.900	256.349	.436	256.785	3.30	7.71	.92	257.71	.00	.69	1.36	1.500	.000	.00	1 .0
.099	.7130					.0270	.00	.44	2.42	.20	.013	.00	.00	PIPE
10147.000	256.419	.452	256.871	3.30	7.35	.84	257.71	.00	.69	1.38	1.500	.000	.00	1 .0
.088	.7130					.0237	.00	.45	2.27	.20	.013	.00	.00	PIPE
10147.090	256.482	.468	256.950	3.30	7.01	.76	257.71	.00	.69	1.39	1.500	.000	.00	1 .0
.077	.7130					.0207	.00	.47	2.12	.20	.013	.00	.00	PIPE
10147.170	256.537	.484	257.021	3.30	6.68	.69	257.71	.00	.69	1.40	1.500	.000	.00	1 .0
.066	.7130					.0182	.00	.48	1.99	.20	.013	.00	.00	PIPE
10147.230	256.584	.501	257.085	3.30	6.37	.63	257.72	.00	.69	1.41	1.500	.000	.00	1 .0
.057	.7130					.0159	.00	.50	1.86	.20	.013	.00	.00	PIPE
10147.290	256.624	.519	257.143	3.30	6.08	.57	257.72	.00	.69	1.43	1.500	.000	.00	1 .0
.049	.7130					.0139	.00	.52	1.74	.20	.013	.00	.00	PIPE
10147.340	256.659	.537	257.196	3.30	5.79	.52	257.72	.00	.69	1.44	1.500	.000	.00	1 .0
.039	.7130					.0122	.00	.54	1.62	.20	.013	.00	.00	PIPE
10147.380	256.687	.557	257.244	3.30	5.52	.47	257.72	.00	.69	1.45	1.500	.000	.00	1 .0
.033	.7130					.0107	.00	.56	1.52	.20	.013	.00	.00	PIPE
10147.410	256.710	.577	257.287	3.30	5.27	.43	257.72	.00	.69	1.46	1.500	.000	.00	1 .0
.025	.7130					.0094	.00	.58	1.42	.20	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 4-27-2015 Time: 4:15:39

MAPLE CANYON
SYSTEM 4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
10147.440	256.728	.598	257.327	3.30	5.02	.39	257.72	.00	.69	1.47	1.500	.000	.00	1 .0
.021	.7130					.0083	.00	.60	1.32	.20	.013	.00	.00	PIPE
10147.460	256.743	.619	257.362	3.30	4.79	.36	257.72	.00	.69	1.48	1.500	.000	.00	1 .0
.014	.7130					.0072	.00	.62	1.24	.20	.013	.00	.00	PIPE
10147.470	256.753	.642	257.395	3.30	4.56	.32	257.72	.00	.69	1.48	1.500	.000	.00	1 .0
.008	.7130					.0064	.00	.64	1.15	.20	.013	.00	.00	PIPE
10147.480	256.758	.666	257.424	3.30	4.35	.29	257.72	.00	.69	1.49	1.500	.000	.00	1 .0
.003	.7130					.0056	.00	.67	1.08	.20	.013	.00	.00	PIPE
10147.480	256.760	.692	257.452	3.30	4.14	.27	257.72	.00	.69	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10147.480	256.760	1.065	257.825	3.30	.77	.01	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.590	.0825					.0001	.00	1.07	.13	.11	.013	.00	.00	BOX
10148.070	256.809	1.015	257.824	3.30	.81	.01	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.561	.0825					.0001	.00	1.02	.14	.11	.013	.00	.00	BOX
10148.630	256.855	.968	257.823	3.30	.85	.01	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.533	.0825					.0001	.00	.97	.15	.11	.013	.00	.00	BOX
10149.160	256.899	.923	257.822	3.30	.89	.01	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.507	.0825					.0001	.00	.92	.16	.11	.013	.00	.00	BOX

MAPLE CANYON
SYSTEM 4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10149.670	256.941	.880	257.821	3.30	.94	.01	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.480	.0825					.0001	.00	.88	.18	.11	.013	.00	.00	BOX
10150.150	256.980	.839	257.820	3.30	.98	.02	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.456	.0825					.0002	.00	.84	.19	.11	.013	.00	.00	BOX
10150.610	257.018	.800	257.818	3.30	1.03	.02	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.433	.0825					.0002	.00	.80	.20	.11	.013	.00	.00	BOX
10151.040	257.054	.763	257.817	3.30	1.08	.02	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.409	.0825					.0002	.00	.76	.22	.11	.013	.00	.00	BOX
10151.450	257.087	.727	257.815	3.30	1.13	.02	257.83	.00	.28	4.00	6.000	4.000	.00	0 .0
.030	.0825					.0002	.00	.73	.23	.11	.013	.00	.00	BOX
10151.480	257.090	.725	257.815	3.30	1.14	.02	257.84	.00	.28	4.00	6.000	4.000	.00	0 .0

System 04

Q =	3.3	cfs
V =	16.76	ft/sec
D =	0.253	ft
A =	0.196897	ft²
Ye =	0.313765	ft
g =	32.2	ft/sec²
Fr =	5.272828	
From Figure 7-2		
Ho =	4.614764	
HLoss/Ho	0.68	
HLoss =	3.13804	
Remaining Energy	1.476724	
Area Above Sill		
Height	0.5	ft
Width	8.5	ft
Area Above Sill	4.25	in
Depth of Sill	0.916667	ft
Total Depth =	1.416667	ft
Velocity	0.776471	ft/sec
TH	1.426029	OK

Figure 7-2

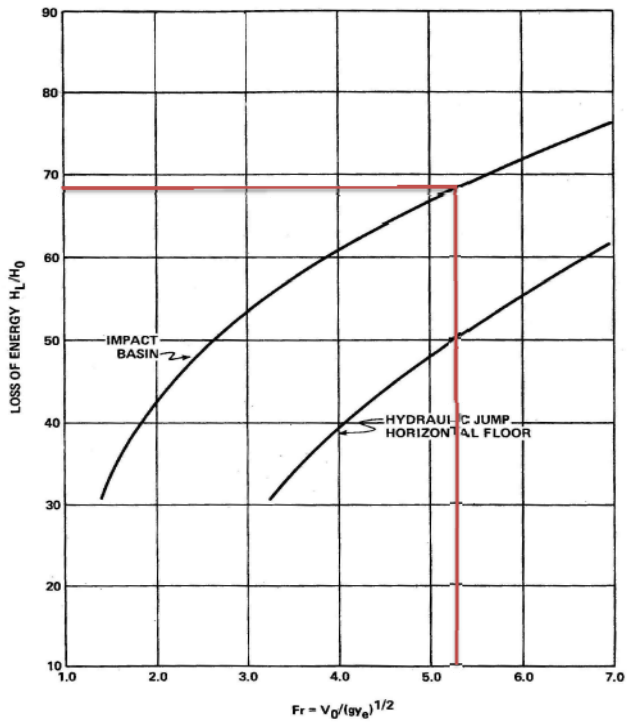


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 5
(3RD BETWEEN QUINCE & REDWOOD)

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Worksheet for 5 Existing

Project Description

Solve For	Spread

Input Data

Discharge		3.30	ft³/s
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Grate Width		2.00	ft
Grate Length		3.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	19.82	ft
Depth	4.76	in
Gutter Depression	0.00	in
Total Depression	0.00	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

Worksheet for 5 Upgrade

Project Description

Solve For	Spread

Input Data

Discharge		3.30	ft³/s
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Grate Width		3.00	ft
Grate Length		6.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	14.80	ft
Depth	3.55	in
Gutter Depression	0.00	in
Total Depression	0.00	in
Open Grate Area	8.10	ft²
Active Grate Weir Length	9.00	ft

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10023.310	213.610	.237	213.847	3.30	18.46	5.29	219.14	.00	.69	1.09	1.500	.000	.00	0 .0
.460	.0120					.3457	.16	.24	8.04	.55	.013	.00	.00	PIPE
10023.770	213.616	.234	213.850	3.30	18.70	5.43	219.28	.00	.69	1.09	1.500	.000	.00	0 .0
1.465	.0120					.3774	.55	.23	8.19	.55	.013	.00	.00	PIPE
10025.230	213.633	.226	213.859	3.30	19.62	5.98	219.84	.00	.69	1.07	1.500	.000	.00	0 .0
1.405	.0120					.4326	.61	.23	8.73	.55	.013	.00	.00	PIPE
10026.640	213.650	.220	213.870	3.30	20.58	6.57	220.44	.00	.69	1.06	1.500	.000	.00	0 .0
48.982	.4624					.4624	22.65	.22	9.32	.22	.013	.00	.00	PIPE
10075.620	236.301	.220	236.521	3.30	20.58	6.57	243.09	.00	.69	1.06	1.500	.000	.00	0 .0
19.407	.4624					.4439	8.62	.22	9.32	.22	.013	.00	.00	PIPE
10095.030	245.276	.223	245.499	3.30	20.00	6.21	251.71	.00	.69	1.07	1.500	.000	.00	0 .0
8.745	.4624					.3988	3.49	.22	8.96	.22	.013	.00	.00	PIPE
10103.780	249.320	.231	249.551	3.30	19.07	5.65	255.20	.00	.69	1.08	1.500	.000	.00	0 .0
4.440	.4624					.3486	1.55	.23	8.41	.22	.013	.00	.00	PIPE
10108.220	251.374	.239	251.613	3.30	18.18	5.13	256.75	.00	.69	1.10	1.500	.000	.00	0 .0
2.905	.4624					.3046	.88	.24	7.88	.22	.013	.00	.00	PIPE
10111.120	252.717	.247	252.964	3.30	17.34	4.67	257.63	.00	.69	1.11	1.500	.000	.00	0 .0
2.117	.4624					.2659	.56	.25	7.39	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10113.240	253.696	.255	253.951	3.30	16.53	4.24	258.19	.00	.69	1.13	1.500	.000	.00	0 .0
1.639	.4624					.2319	.38	.26	6.92	.22	.013	.00	.00	PIPE
10114.880	254.454	.263	254.717	3.30	15.76	3.86	258.57	.00	.69	1.14	1.500	.000	.00	0 .0
1.313	.4624					.2024	.27	.26	6.48	.22	.013	.00	.00	PIPE
10116.190	255.061	.272	255.333	3.30	15.03	3.51	258.84	.00	.69	1.16	1.500	.000	.00	0 .0
1.082	.4624					.1770	.19	.27	6.08	.22	.013	.00	.00	PIPE
10117.270	255.562	.282	255.844	3.30	14.33	3.19	259.03	.00	.69	1.17	1.500	.000	.00	0 .0
.912	.4624					.1548	.14	.28	5.70	.22	.013	.00	.00	PIPE
10118.190	255.984	.291	256.275	3.30	13.66	2.90	259.17	.00	.69	1.19	1.500	.000	.00	0 .0
.774	.4624					.1351	.10	.29	5.33	.22	.013	.00	.00	PIPE
10118.960	256.342	.301	256.643	3.30	13.02	2.63	259.28	.00	.69	1.20	1.500	.000	.00	0 .0
.666	.4624					.1181	.08	.30	5.00	.22	.013	.00	.00	PIPE
10119.630	256.650	.311	256.961	3.30	12.42	2.39	259.36	.00	.69	1.22	1.500	.000	.00	0 .0
.575	.4624					.1032	.06	.31	4.68	.22	.013	.00	.00	PIPE
10120.200	256.916	.322	257.238	3.30	11.84	2.18	259.41	.00	.69	1.23	1.500	.000	.00	0 .0
.502	.4624					.0903	.05	.32	4.39	.22	.013	.00	.00	PIPE
10120.700	257.148	.333	257.481	3.30	11.29	1.98	259.46	.00	.69	1.25	1.500	.000	.00	0 .0
.440	.4624					.0789	.03	.33	4.11	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10121.140	257.352	.344	257.696	3.30	10.76	1.80	259.49	.00	.69	1.26	1.500	.000	.00	0 .0
.385	.4624					.0689	.03	.34	3.85	.22	.013	.00	.00	PIPE
10121.530	257.530	.356	257.886	3.30	10.26	1.64	259.52	.00	.69	1.28	1.500	.000	.00	0 .0
.340	.4624					.0603	.02	.36	3.60	.22	.013	.00	.00	PIPE
10121.870	257.687	.368	258.055	3.30	9.79	1.49	259.54	.00	.69	1.29	1.500	.000	.00	0 .0
.298	.4624					.0527	.02	.37	3.37	.22	.013	.00	.00	PIPE
10122.170	257.825	.381	258.206	3.30	9.33	1.35	259.56	.00	.69	1.31	1.500	.000	.00	0 .0
.264	.4624					.0461	.01	.38	3.16	.22	.013	.00	.00	PIPE
10122.430	257.947	.394	258.341	3.30	8.90	1.23	259.57	.00	.69	1.32	1.500	.000	.00	0 .0
.231	.4624					.0404	.01	.39	2.96	.22	.013	.00	.00	PIPE
10122.660	258.054	.408	258.462	3.30	8.48	1.12	259.58	.00	.69	1.34	1.500	.000	.00	0 .0
.205	.4624					.0353	.01	.41	2.77	.22	.013	.00	.00	PIPE
10122.870	258.149	.422	258.571	3.30	8.09	1.02	259.59	.00	.69	1.35	1.500	.000	.00	0 .0
.182	.4624					.0309	.01	.42	2.59	.22	.013	.00	.00	PIPE
10123.050	258.233	.436	258.669	3.30	7.71	.92	259.59	.00	.69	1.36	1.500	.000	.00	0 .0
.156	.4624					.0270	.00	.44	2.42	.22	.013	.00	.00	PIPE
10123.200	258.305	.452	258.757	3.30	7.35	.84	259.60	.00	.69	1.38	1.500	.000	.00	0 .0
.138	.4624					.0237	.00	.45	2.27	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10123.340	258.368	.468	258.836	3.30	7.01	.76	259.60	.00	.69	1.39	1.500	.000	.00	0 .0
.121	.4624					.0207	.00	.47	2.12	.22	.013	.00	.00	PIPE
10123.460	258.424	.484	258.908	3.30	6.68	.69	259.60	.00	.69	1.40	1.500	.000	.00	0 .0
.104	.4624					.0182	.00	.48	1.99	.22	.013	.00	.00	PIPE
10123.570	258.472	.501	258.973	3.30	6.37	.63	259.60	.00	.69	1.41	1.500	.000	.00	0 .0
.088	.4624					.0159	.00	.50	1.86	.22	.013	.00	.00	PIPE
10123.650	258.513	.519	259.032	3.30	6.08	.57	259.61	.00	.69	1.43	1.500	.000	.00	0 .0
.076	.4624					.0139	.00	.52	1.74	.22	.013	.00	.00	PIPE
10123.730	258.548	.537	259.085	3.30	5.79	.52	259.61	.00	.69	1.44	1.500	.000	.00	0 .0
.061	.4624					.0122	.00	.54	1.62	.22	.013	.00	.00	PIPE
10123.790	258.576	.557	259.133	3.30	5.52	.47	259.61	.00	.69	1.45	1.500	.000	.00	0 .0
.051	.4624					.0107	.00	.56	1.52	.22	.013	.00	.00	PIPE
10123.840	258.600	.577	259.177	3.30	5.27	.43	259.61	.00	.69	1.46	1.500	.000	.00	0 .0
.040	.4624					.0094	.00	.58	1.42	.22	.013	.00	.00	PIPE
10123.880	258.618	.598	259.216	3.30	5.02	.39	259.61	.00	.69	1.47	1.500	.000	.00	0 .0
.032	.4624					.0083	.00	.60	1.32	.22	.013	.00	.00	PIPE
10123.910	258.633	.619	259.252	3.30	4.79	.36	259.61	.00	.69	1.48	1.500	.000	.00	0 .0
.021	.4624					.0072	.00	.62	1.24	.22	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10123.930	258.643	.642	259.285	3.30	4.56	.32	259.61	.00	.69	1.48	1.500	.000	.00	0 .0
.012	.4624					.0064	.00	.64	1.15	.22	.013	.00	.00	PIPE
10123.950	258.648	.666	259.314	3.30	4.35	.29	259.61	.00	.69	1.49	1.500	.000	.00	0 .0
.004	.4624					.0056	.00	.67	1.08	.22	.013	.00	.00	PIPE
10123.950	258.650	.692	259.342	3.30	4.14	.27	259.61	.00	.69	1.50	1.500	.000	.00	0 .0
WALL	ENTRANCE													
10123.950	258.650	1.065	259.715	3.30	.77	.01	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.572	.0850					.0001	.00	1.07	.13	.11	.013	.00	.00	BOX
10124.520	258.699	1.015	259.714	3.30	.81	.01	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.545	.0850					.0001	.00	1.02	.14	.11	.013	.00	.00	BOX
10125.070	258.745	.968	259.713	3.30	.85	.01	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.518	.0850					.0001	.00	.97	.15	.11	.013	.00	.00	BOX
10125.580	258.789	.923	259.712	3.30	.89	.01	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.491	.0850					.0001	.00	.92	.16	.11	.013	.00	.00	BOX
10126.080	258.831	.880	259.711	3.30	.94	.01	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.467	.0850					.0001	.00	.88	.18	.11	.013	.00	.00	BOX
10126.540	258.870	.839	259.710	3.30	.98	.02	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.442	.0850					.0002	.00	.84	.19	.11	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10126.990	258.908	.800	259.708	3.30	1.03	.02	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.420	.0850					.0002	.00	.80	.20	.11	.013	.00	.00	BOX
10127.410	258.944	.763	259.707	3.30	1.08	.02	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.397	.0850					.0002	.00	.76	.22	.11	.013	.00	.00	BOX
10127.800	258.977	.727	259.705	3.30	1.13	.02	259.72	.00	.28	4.00	6.000	4.000	.00	0 .0
.147	.0850					.0002	.00	.73	.23	.11	.013	.00	.00	BOX
10127.950	258.990	.714	259.704	3.30	1.15	.02	259.73	.00	.28	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10127.950	258.990	.415	259.405	3.30	8.27	1.06	260.47	.00	.69	1.34	1.500	.000	.00	0 .0
4.775	.0425					.0340	.16	.42	2.67	.40	.013	.00	.00	PIPE
10132.730	259.193	.422	259.615	3.30	8.09	1.02	260.63	.00	.69	1.35	1.500	.000	.00	0 .0
6.722	.0425					.0309	.21	.42	2.59	.40	.013	.00	.00	PIPE
10139.450	259.479	.436	259.915	3.30	7.71	.92	260.84	.00	.69	1.36	1.500	.000	.00	0 .0
4.381	.0425					.0270	.12	.44	2.42	.40	.013	.00	.00	PIPE
10143.830	259.665	.452	260.117	3.30	7.35	.84	260.96	.00	.69	1.38	1.500	.000	.00	0 .0
3.198	.0425					.0237	.08	.45	2.27	.40	.013	.00	.00	PIPE
10147.030	259.801	.468	260.270	3.30	7.01	.76	261.03	.00	.69	1.39	1.500	.000	.00	0 .0
2.448	.0425					.0207	.05	.47	2.12	.40	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10149.470	259.906	.484	260.390	3.30	6.68	.69	261.08	.00	.69	1.40	1.500	.000	.00	0 .0
1.889	.0425					.0182	.03	.48	1.99	.40	.013	.00	.00	PIPE
10151.360	259.986	.501	260.487	3.30	6.37	.63	261.12	.00	.69	1.41	1.500	.000	.00	0 .0
1.477	.0425					.0159	.02	.50	1.86	.40	.013	.00	.00	PIPE
10152.840	260.049	.519	260.568	3.30	6.08	.57	261.14	.00	.69	1.43	1.500	.000	.00	0 .0
1.192	.0425					.0139	.02	.52	1.74	.40	.013	.00	.00	PIPE
10154.030	260.100	.537	260.637	3.30	5.79	.52	261.16	.00	.69	1.44	1.500	.000	.00	0 .0
.903	.0425					.0122	.01	.54	1.62	.40	.013	.00	.00	PIPE
10154.940	260.138	.557	260.695	3.30	5.52	.47	261.17	.00	.69	1.45	1.500	.000	.00	0 .0
.726	.0425					.0107	.01	.56	1.52	.40	.013	.00	.00	PIPE
10155.660	260.169	.577	260.746	3.30	5.27	.43	261.18	.00	.69	1.46	1.500	.000	.00	0 .0
.548	.0425					.0094	.01	.58	1.42	.40	.013	.00	.00	PIPE
10156.210	260.192	.598	260.790	3.30	5.02	.39	261.18	.00	.69	1.47	1.500	.000	.00	0 .0
.426	.0425					.0083	.00	.60	1.32	.40	.013	.00	.00	PIPE
10156.630	260.210	.619	260.829	3.30	4.79	.36	261.19	.00	.69	1.48	1.500	.000	.00	0 .0
.266	.0425					.0072	.00	.62	1.24	.40	.013	.00	.00	PIPE
10156.900	260.222	.642	260.864	3.30	4.56	.32	261.19	.00	.69	1.48	1.500	.000	.00	0 .0
.149	.0425					.0064	.00	.64	1.15	.40	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:57: 2

MAPLE CANYON
SYSTEM 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10157.050	260.228	.666	260.894	3.30	4.35	.29	261.19	.00	.69	1.49	1.500	.000	.00	0 .0
.050	.0425					.0056	.00	.67	1.08	.40	.013	.00	.00	PIPE
10157.100	260.230	.692	260.922	3.30	4.14	.27	261.19	.00	.69	1.50	1.500	.000	.00	0 .0

System 05

Q =	3.3	cfs
V =	18.46	ft/sec
D =	0.237	ft
A =	0.178765	ft²
Ye =	0.298969	ft
g =	32.2	ft/sec²
Fr =	5.94964	
From Figure 7-2		
Ho =	5.528484	
HLoss/Ho	0.71	
HLoss =	3.925224	
Remaining Energy	1.60326	
Area Above Sill		
Height	0.7	ft
Width	8.5	ft
Area Above Sill	5.95	in
Depth of Sill	0.916667	ft
Total Depth =	1.616667	ft
Velocity	0.554622	ft/sec
TH	1.621443	OK

Figure 7-2

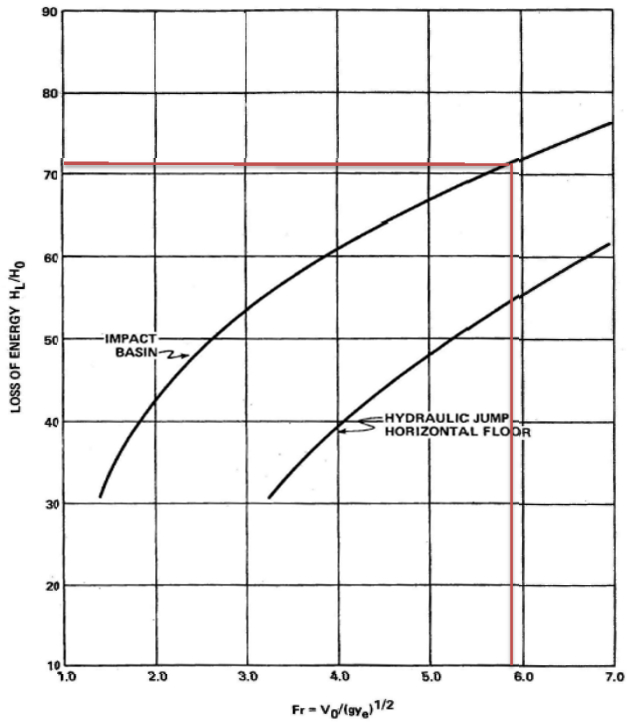


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 6
(4TH & REDWOOD)

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Worksheet for 6D Existing

Project Description

Solve For	Spread

Input Data

Discharge		49.58	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		8.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	257.02	ft
Depth	62.82	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 6E Existing

Project Description

Solve For	Spread

Input Data

Discharge		21.34	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		8.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	45.47	ft
Depth	12.05	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 6D Upgrade and Revised Q

Project Description

Solve For	Spread

Input Data

Discharge		16.75	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		20.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	23.43	ft
Depth	6.76	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 6E Upgrade

Project Description

Solve For	Spread

Input Data

Discharge		21.34	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		20.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	27.54	ft
Depth	7.75	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 6D NEW 1

Project Description

Solve For	Efficiency

Input Data

Discharge	33.32	ft³/s
Slope	4.22	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	20.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	55.08	%
Intercepted Flow	18.35	ft³/s
Bypass Flow	14.97	ft³/s
Spread	19.72	ft
Depth	5.87	in
Flow Area	3.96	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	8.42	ft/s
Equivalent Cross Slope	8.37	%
Length Factor	0.36	
Total Interception Length	55.73	ft

Worksheet for 6D NEW 2

Project Description

Solve For	Efficiency

Input Data

Discharge	17.99	ft³/s
Slope	0.45	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	20.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	95.93	%
Intercepted Flow	17.26	ft³/s
Bypass Flow	0.73	ft³/s
Spread	23.92	ft
Depth	6.88	in
Flow Area	5.79	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	3.11	ft/s
Equivalent Cross Slope	7.19	%
Length Factor	0.83	
Total Interception Length	24.06	ft

Program Package Serial Number: 7069

WATER SURFACE PROFILE LISTING Date:11-12-2014 Time:10:40:13

MAPLE CANYON
SYSTEM 6A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10071.210	223.580	.869	224.449	73.70	39.56	24.30	248.74	.00	2.69	3.02	3.500	.000	.00	1 .0
.021	.0101					.2938	.01	.87	8.88	2.22	.013	.00	.00	PIPE
10071.230	223.580	.869	224.449	73.70	39.56	24.30	248.75	.00	2.69	3.02	3.500	.000	.00	1 .0
7.880	.0101					.3149	2.48	.87	8.88	2.22	.013	.00	.00	PIPE
10079.110	223.660	.840	224.500	73.70	41.49	26.73	251.23	.00	2.69	2.99	3.500	.000	.00	1 .0
7.201	.4682					.3275	2.36	.84	9.49	.77	.013	.00	.00	PIPE
10086.310	227.031	.851	227.882	73.70	40.74	25.77	253.65	.00	2.69	3.00	3.500	.000	.00	1 .0
13.681	.4682					.2991	4.09	.85	9.25	.77	.013	.00	.00	PIPE
10099.990	233.436	.880	234.317	73.70	38.84	23.43	257.74	.00	2.69	3.04	3.500	.000	.00	1 .0
10.162	.4682					.2616	2.66	.88	8.66	.77	.013	.00	.00	PIPE
10110.150	238.194	.911	239.104	73.70	37.04	21.30	260.40	.00	2.69	3.07	3.500	.000	.00	1 .0
7.957	.4682					.2288	1.82	.91	8.11	.77	.013	.00	.00	PIPE
10118.110	241.919	.942	242.861	73.70	35.31	19.36	262.22	.00	2.69	3.10	3.500	.000	.00	1 .0
6.446	.4682					.2002	1.29	.94	7.59	.77	.013	.00	.00	PIPE
10124.560	244.937	.975	245.912	73.70	33.67	17.60	263.51	.00	2.69	3.14	3.500	.000	.00	1 .0
5.346	.4682					.1752	.94	.97	7.10	.77	.013	.00	.00	PIPE
10129.900	247.440	1.009	248.449	73.70	32.10	16.00	264.45	.00	2.69	3.17	3.500	.000	.00	1 .0
4.509	.4682					.1533	.69	1.01	6.65	.77	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 6A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10134.410	249.551	1.044	250.594	73.70	30.61	14.55	265.14	.00	2.69	3.20	3.500	.000	.00	1 .0
3.851	.4682					.1342	.52	1.04	6.22	.77	.013	.00	.00	PIPE
10138.260	251.354	1.080	252.434	73.70	29.18	13.22	265.66	.00	2.69	3.23	3.500	.000	.00	1 .0
3.320	.4682					.1175	.39	1.08	5.82	.77	.013	.00	.00	PIPE
10141.580	252.908	1.118	254.026	73.70	27.83	12.02	266.05	.00	2.69	3.26	3.500	.000	.00	1 .0
2.885	.4682					.1029	.30	1.12	5.44	.77	.013	.00	.00	PIPE
10144.470	254.258	1.158	255.416	73.70	26.53	10.93	266.35	.00	2.69	3.29	3.500	.000	.00	1 .0
2.521	.4682					.0902	.23	1.16	5.09	.77	.013	.00	.00	PIPE
10146.990	255.438	1.199	256.637	73.70	25.30	9.94	266.57	.00	2.69	3.32	3.500	.000	.00	1 .0
2.212	.4682					.0790	.17	1.20	4.76	.77	.013	.00	.00	PIPE
10149.200	256.474	1.241	257.715	73.70	24.12	9.03	266.75	.00	2.69	3.35	3.500	.000	.00	1 .0
1.947	.4682					.0693	.13	1.24	4.45	.77	.013	.00	.00	PIPE
10151.150	257.385	1.286	258.671	73.70	23.00	8.21	266.88	.00	2.69	3.37	3.500	.000	.00	1 .0
1.719	.4682					.0607	.10	1.29	4.16	.77	.013	.00	.00	PIPE
10152.860	258.190	1.332	259.522	73.70	21.93	7.46	266.99	.00	2.69	3.40	3.500	.000	.00	1 .0
1.520	.4682					.0533	.08	1.33	3.89	.77	.013	.00	.00	PIPE
10154.380	258.902	1.380	260.282	73.70	20.91	6.79	267.07	.00	2.69	3.42	3.500	.000	.00	1 .0
1.345	.4682					.0468	.06	1.38	3.63	.77	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 6A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10155.730	259.531	1.430	260.961	73.70	19.93	6.17	267.13	.00	2.69	3.44	3.500	.000	.00	1 .0
1.190	.4682					.0410	.05	1.43	3.39	.77	.013	.00	.00	PIPE
10156.920	260.089	1.482	261.571	73.70	19.00	5.61	267.18	.00	2.69	3.46	3.500	.000	.00	1 .0
1.054	.4682					.0361	.04	1.48	3.16	.77	.013	.00	.00	PIPE
10157.970	260.582	1.537	262.119	73.70	18.12	5.10	267.22	.00	2.69	3.47	3.500	.000	.00	1 .0
.931	.4682					.0317	.03	1.54	2.95	.77	.013	.00	.00	PIPE
10158.900	261.018	1.594	262.612	73.70	17.28	4.64	267.25	.00	2.69	3.49	3.500	.000	.00	1 .0
.821	.4682					.0279	.02	1.59	2.75	.77	.013	.00	.00	PIPE
10159.720	261.403	1.654	263.056	73.70	16.47	4.21	267.27	.00	2.69	3.49	3.500	.000	.00	1 .0
.723	.4682					.0245	.02	1.65	2.57	.77	.013	.00	.00	PIPE
10160.450	261.741	1.716	263.457	73.70	15.71	3.83	267.29	.00	2.69	3.50	3.500	.000	.00	1 .0
.634	.4682					.0216	.01	1.72	2.39	.77	.013	.00	.00	PIPE
10161.080	262.037	1.782	263.819	73.70	14.98	3.48	267.30	.00	2.69	3.50	3.500	.000	.00	1 .0
.552	.4682					.0190	.01	1.78	2.23	.77	.013	.00	.00	PIPE
10161.630	262.296	1.850	264.146	73.70	14.28	3.17	267.31	.00	2.69	3.49	3.500	.000	.00	1 .0
.478	.4682					.0168	.01	1.85	2.07	.77	.013	.00	.00	PIPE
10162.110	262.519	1.923	264.442	73.70	13.61	2.88	267.32	.00	2.69	3.48	3.500	.000	.00	1 .0
.409	.4682					.0148	.01	1.92	1.92	.77	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 6A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10162.520	262.711	1.999	264.710	73.70	12.98	2.62	267.33	.00	2.69	3.46	3.500	.000	.00	1 .0
.347	.4682					.0131	.00	2.00	1.79	.77	.013	.00	.00	PIPE
10162.870	262.873	2.079	264.952	73.70	12.38	2.38	267.33	.00	2.69	3.44	3.500	.000	.00	1 .0
.287	.4682					.0116	.00	2.08	1.66	.77	.013	.00	.00	PIPE
10163.150	263.008	2.164	265.172	73.70	11.80	2.16	267.33	.00	2.69	3.40	3.500	.000	.00	1 .0
.232	.4682					.0102	.00	2.16	1.53	.77	.013	.00	.00	PIPE
10163.390	263.116	2.254	265.370	73.70	11.25	1.97	267.34	.00	2.69	3.35	3.500	.000	.00	1 .0
.180	.4682					.0091	.00	2.25	1.42	.77	.013	.00	.00	PIPE
10163.570	263.200	2.350	265.551	73.70	10.73	1.79	267.34	.00	2.69	3.29	3.500	.000	.00	1 .0
.129	.4682					.0081	.00	2.35	1.31	.77	.013	.00	.00	PIPE
10163.690	263.261	2.454	265.714	73.70	10.23	1.62	267.34	.00	2.69	3.20	3.500	.000	.00	1 .0
.078	.4682					.0072	.00	2.45	1.20	.77	.013	.00	.00	PIPE
10163.770	263.297	2.565	265.863	73.70	9.75	1.48	267.34	.00	2.69	3.10	3.500	.000	.00	1 .0
.027	.4682					.0065	.00	2.57	1.10	.77	.013	.00	.00	PIPE
10163.800	263.310	2.688	265.998	73.70	9.30	1.34	267.34	.00	2.69	2.95	3.500	.000	.00	1 .0
WALL	ENTRANCE													
10163.800	263.310	4.418	267.728	73.70	4.17	.27	268.00	.00	2.19	4.00	6.000	4.000	.00	0 .0
2.146	.0841					.0009	.00	4.42	.35	.80	.013	.00	.00	BOX

MAPLE CANYON
SYSTEM 6A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10165.950	263.491	4.212	267.703	73.70	4.37	.30	268.00	.00	2.19	4.00	6.000	4.000	.00	0 .0
1.987	.0841					.0010	.00	4.21	.38	.80	.013	.00	.00	BOX
10167.930	263.658	4.016	267.674	73.70	4.59	.33	268.00	.00	2.19	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10167.930	263.658	1.038	264.696	73.70	17.75	4.89	269.59	.00	2.19	4.00	6.000	4.000	.00	0 .0
.026	.0841					.0400	.00	1.04	3.07	.80	.013	.00	.00	BOX
10167.960	263.660	1.038	264.698	73.70	17.75	4.89	269.59	.00	2.19	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10167.960	263.660	1.596	265.256	73.70	17.25	4.62	269.88	.00	2.69	3.49	3.500	.000	.00	1 .0
9.847	.0633					.0278	.27	1.60	2.75	1.29	.013	.00	.00	PIPE
10177.810	264.283	1.654	265.937	73.70	16.47	4.21	270.15	.00	2.69	3.49	3.500	.000	.00	1 .0
8.271	.0633					.0245	.20	1.65	2.57	1.29	.013	.00	.00	PIPE
10186.080	264.806	1.716	266.522	73.70	15.71	3.83	270.35	.00	2.69	3.50	3.500	.000	.00	1 .0
6.784	.0633					.0216	.15	1.72	2.39	1.29	.013	.00	.00	PIPE
10192.860	265.235	1.782	267.017	73.70	14.98	3.48	270.50	.00	2.69	3.50	3.500	.000	.00	1 .0
5.601	.0633					.0190	.11	1.78	2.23	1.29	.013	.00	.00	PIPE
10198.460	265.590	1.850	267.440	73.70	14.28	3.17	270.61	.00	2.69	3.49	3.500	.000	.00	1 .0
4.637	.0633					.0168	.08	1.85	2.07	1.29	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 6A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10203.100	265.883	1.923	267.805	73.70	13.61	2.88	270.68	.00	2.69	3.48	3.500	.000	.00	1 .0
3.830	.0633					.0148	.06	1.92	1.92	1.29	.013	.00	.00	PIPE
10206.930	266.125	1.999	268.124	73.70	12.98	2.62	270.74	.00	2.69	3.46	3.500	.000	.00	1 .0
3.139	.0633					.0131	.04	2.00	1.79	1.29	.013	.00	.00	PIPE
10210.070	266.324	2.079	268.403	73.70	12.38	2.38	270.78	.00	2.69	3.44	3.500	.000	.00	1 .0
2.538	.0633					.0116	.03	2.08	1.66	1.29	.013	.00	.00	PIPE
10212.610	266.484	2.164	268.648	73.70	11.80	2.16	270.81	.00	2.69	3.40	3.500	.000	.00	1 .0
2.005	.0633					.0102	.02	2.16	1.53	1.29	.013	.00	.00	PIPE
10214.610	266.611	2.254	268.865	73.70	11.25	1.97	270.83	.00	2.69	3.35	3.500	.000	.00	1 .0
1.521	.0633					.0091	.01	2.25	1.42	1.29	.013	.00	.00	PIPE
10216.130	266.707	2.350	269.058	73.70	10.73	1.79	270.84	.00	2.69	3.29	3.500	.000	.00	1 .0
1.074	.0633					.0081	.01	2.35	1.31	1.29	.013	.00	.00	PIPE
10217.210	266.775	2.454	269.229	73.70	10.23	1.62	270.85	.00	2.69	3.20	3.500	.000	.00	1 .0
.644	.0633					.0072	.00	2.45	1.20	1.29	.013	.00	.00	PIPE
10217.850	266.816	2.565	269.381	73.70	9.75	1.48	270.86	.00	2.69	3.10	3.500	.000	.00	1 .0
.220	.0633					.0065	.00	2.57	1.10	1.29	.013	.00	.00	PIPE
10218.070	266.830	2.688	269.518	73.70	9.30	1.34	270.86	.00	2.69	2.95	3.500	.000	.00	1 .0
10218.070	266.830	2.704	269.534	73.70	10.99	1.87	271.41	.00	2.70	1.79	3.000	.000	.00	1 .0

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48: 7

MAPLE CANYON
SYSTEM 6B

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10023.500	266.830	3.500	270.330	17.26	1.79	.05	270.38	.00	1.27	.00	3.500	.000	.00	1 .0
.000	.1400					.0003	.00	3.50	.00	.51	.013	.00	.00	PIPE
10023.500	266.830	3.500	270.330	17.26	1.79	.05	270.38	.00	1.27	.00	3.500	.000	.00	1 .0
2.282	.1400					.0003	.00	3.50	.00	.51	.013	.00	.00	PIPE
10025.780	267.150	3.175	270.325	17.26	1.88	.05	270.38	.00	1.27	2.03	3.500	.000	.00	1 .0
.718	.1400					.0003	.00	3.18	.16	.51	.013	.00	.00	PIPE
10026.500	267.250	3.072	270.322	17.26	1.93	.06	270.38	.00	1.27	2.29	3.500	.000	.00	1 .0
16.974	.0099					.0003	.00	3.07	.17	.98	.013	.00	.00	PIPE
10043.470	267.418	2.903	270.321	17.26	2.02	.06	270.38	.00	1.27	2.63	3.500	.000	.00	1 .0
14.351	.0099					.0003	.00	2.90	.20	.98	.013	.00	.00	PIPE
10057.820	267.560	2.759	270.319	17.26	2.12	.07	270.39	.00	1.27	2.86	3.500	.000	.00	1 .0
12.764	.0099					.0003	.00	2.76	.22	.98	.013	.00	.00	PIPE
10070.590	267.686	2.630	270.316	17.26	2.23	.08	270.39	.00	1.27	3.03	3.500	.000	.00	1 .0
11.480	.0099					.0004	.00	2.63	.24	.98	.013	.00	.00	PIPE
10082.070	267.800	2.513	270.313	17.26	2.33	.08	270.40	.00	1.27	3.15	3.500	.000	.00	1 .0
10.397	.0099					.0004	.00	2.51	.27	.98	.013	.00	.00	PIPE
10092.470	267.903	2.406	270.309	17.26	2.45	.09	270.40	.00	1.27	3.24	3.500	.000	.00	1 .0
4.784	.0099					.0005	.00	2.41	.29	.98	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48: 7

MAPLE CANYON
SYSTEM 6B

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10097.250	267.950	2.357	270.307	17.26	2.50	.10	270.40	.00	1.27	3.28	3.500	.000	.00	1 .0
WALL	ENTRANCE													
10097.250	267.950	2.450	270.400	17.26	1.76	.05	270.45	.00	.83	4.00	6.000	4.000	.00	0 .0
1.327	.0825				.0002	.00	2.45	.20	.31	.013	.00	.00	BOX	
10098.580	268.059	2.336	270.395	17.26	1.85	.05	270.45	.00	.83	4.00	6.000	4.000	.00	0 .0
1.257	.0825				.0003	.00	2.34	.21	.31	.013	.00	.00	BOX	
10099.830	268.163	2.227	270.390	17.26	1.94	.06	270.45	.00	.83	4.00	6.000	4.000	.00	0 .0
1.189	.0825				.0003	.00	2.23	.23	.31	.013	.00	.00	BOX	
10101.020	268.261	2.123	270.385	17.26	2.03	.06	270.45	.00	.83	4.00	6.000	4.000	.00	0 .0
.227	.0825				.0003	.00	2.12	.25	.31	.013	.00	.00	BOX	
10101.250	268.280	2.104	270.384	17.26	2.05	.07	270.45	.00	.83	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10101.250	268.280	2.104	270.384	17.26	2.86	.13	270.51	.00	1.27	3.43	3.500	.000	.00	1 .0
7.022	.0105				.0007	.00	2.10	.38	.97	.013	.00	.00	PIPE	
10108.270	268.354	2.022	270.376	17.26	3.00	.14	270.52	.00	1.27	3.46	3.500	.000	.00	1 .0
6.455	.0105				.0008	.01	2.02	.41	.97	.013	.00	.00	PIPE	
10114.730	268.422	1.945	270.367	17.26	3.14	.15	270.52	.00	1.27	3.48	3.500	.000	.00	1 .0
5.481	.0105				.0009	.00	1.95	.44	.97	.013	.00	.00	PIPE	

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48: 7

MAPLE CANYON
SYSTEM 6B

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10120.210	268.480	1.879	270.359	17.26	3.28 .17	270.53	.00	1.27	3.49	3.500	.000	.00	1 .0

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System 6A

Q =	73.7	cfs
V =	39.56	ft/sec
D =	0.87	ft
A =	1.862993	ft^2
Ye =	0.965141	ft
g =	32.2	ft/sec^2
Fr =	7.096318	
From Figure 7-2		
Ho =	25.17114	
HLoss/Ho	0.77	
HLoss =	19.38178	
Remaining Energy	5.789363	
Area Above Sill		
Height	0.3	ft
Width	16.5	ft
Area Above Sill	4.95	in
Depth of Sill	0.916667	ft
Total Depth =	1.216667	ft
Velocity	14.88889	ft/sec
TH	4.658887	OK

Figure 7-2

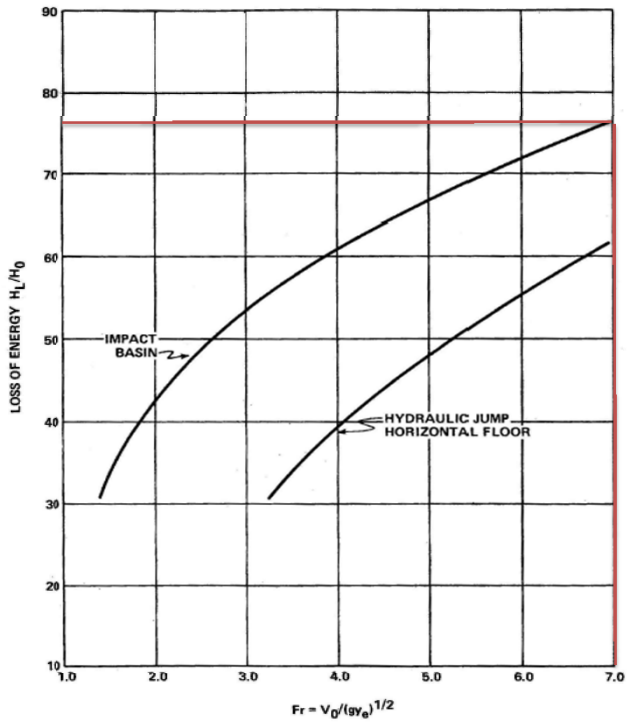


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 7
(4TH & QUINCE)

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Worksheet for 7A Existing

Project Description

Solve For	Efficiency

Input Data

Discharge		4.09	ft³/s
Slope		4.34	%
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Grate Width		3.00	ft
Grate Length		2.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	66.31	%
Intercepted Flow	2.71	ft³/s
Bypass Flow	1.38	ft³/s
Spread	9.06	ft
Depth	2.17	in
Flow Area	0.82	ft²
Gutter Depression	0.00	in
Total Depression	0.00	in
Velocity	4.98	ft/s
Splash Over Velocity	6.59	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.01	
Grate Flow Ratio	0.66	
Active Grate Length	1.34	ft

Worksheet for 7B Existing

Project Description

Solve For	Spread

Input Data

Discharge		7.08	ft³/s
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Grate Width		3.00	ft
Grate Length		4.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	26.57	ft
Depth	6.38	in
Gutter Depression	0.00	in
Total Depression	0.00	in
Open Grate Area	5.40	ft²
Active Grate Weir Length	7.00	ft

Worksheet for 7C Existing

Project Description

Solve For	Spread

Input Data

Discharge		0.97	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		6.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread	2.70	ft
Depth	1.67	in
Gutter Depression	1.02	in
Total Depression	5.02	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

Worksheet for 7A Upgrade

Project Description

Solve For	Efficiency

Input Data

Discharge	4.09	ft³/s
Slope	4.34	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	15.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	99.95	%
Intercepted Flow	4.09	ft³/s
Bypass Flow	0.00	ft³/s
Spread	8.36	ft
Depth	3.15	in
Flow Area	0.77	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	5.31	ft/s
Equivalent Cross Slope	0.1702	ft/ft
Length Factor	0.99	
Total Interception Length	15.21	ft

Worksheet for 7B Upgrade

Project Description

Solve For	Spread

Input Data

Discharge		5.70	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		8.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	18.86	ft
Depth	5.67	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 7C Upgrade

Project Description

Solve For	Spread

Input Data

Discharge		0.97	ft^3/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		4.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	7.91	ft
Depth	3.04	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10023.660	201.400	.628	202.028	10.76	15.33	3.65	205.68	.00	1.26	1.48	1.500	.000	.00	0 .0
.120	.1850					.0779	.01	.63	3.92	.50	.013	.00	.00	PIPE
10023.780	201.422	.629	202.051	10.76	15.29	3.63	205.68	.00	1.26	1.48	1.500	.000	.00	0 .0
2.739	.1850					.0729	.20	.63	3.91	.50	.013	.00	.00	PIPE
10026.520	201.929	.652	202.581	10.76	14.58	3.30	205.88	.00	1.26	1.49	1.500	.000	.00	0 .0
2.283	.1850					.0640	.15	.65	3.65	.50	.013	.00	.00	PIPE
10028.800	202.351	.676	203.027	10.76	13.90	3.00	206.03	.00	1.26	1.49	1.500	.000	.00	0 .0
1.918	.1850					.0563	.11	.68	3.40	.50	.013	.00	.00	PIPE
10030.720	202.706	.702	203.408	10.76	13.26	2.73	206.14	.00	1.26	1.50	1.500	.000	.00	0 .0
1.640	.1850					.0495	.08	.70	3.17	.50	.013	.00	.00	PIPE
10032.360	203.009	.728	203.737	10.76	12.64	2.48	206.22	.00	1.26	1.50	1.500	.000	.00	0 .0
1.396	.1850					.0436	.06	.73	2.96	.50	.013	.00	.00	PIPE
10033.760	203.268	.756	204.024	10.76	12.05	2.26	206.28	.00	1.26	1.50	1.500	.000	.00	0 .0
1.201	.1850					.0384	.05	.76	2.75	.50	.013	.00	.00	PIPE
10034.960	203.490	.785	204.275	10.76	11.49	2.05	206.33	.00	1.26	1.50	1.500	.000	.00	0 .0
1.034	.1850					.0338	.03	.79	2.56	.50	.013	.00	.00	PIPE
10035.990	203.681	.815	204.496	10.76	10.96	1.86	206.36	.00	1.26	1.49	1.500	.000	.00	0 .0
.886	.1850					.0298	.03	.82	2.38	.50	.013	.00	.00	PIPE

Program Package Serial Number: 1553

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MAPLE CANYON
SYSTEM 7A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10036.880	203.845	.847	204.692	10.76	10.45	1.69	206.39	.00	1.26	1.49	1.500	.000	.00	0 .0
.757	.1850					.0264	.02	.85	2.21	.50	.013	.00	.00	PIPE
10037.630	203.985	.881	204.866	10.76	9.96	1.54	206.41	.00	1.26	1.48	1.500	.000	.00	0 .0
.644	.1850					.0233	.02	.88	2.05	.50	.013	.00	.00	PIPE
10038.280	204.104	.917	205.021	10.76	9.50	1.40	206.42	.00	1.26	1.46	1.500	.000	.00	0 .0
.543	.1850					.0207	.01	.92	1.90	.50	.013	.00	.00	PIPE
10038.820	204.205	.955	205.160	10.76	9.05	1.27	206.43	.00	1.26	1.44	1.500	.000	.00	0 .0
.448	.1850					.0183	.01	.96	1.76	.50	.013	.00	.00	PIPE
10039.270	204.288	.996	205.284	10.76	8.63	1.16	206.44	.00	1.26	1.42	1.500	.000	.00	0 .0
.369	.1850					.0163	.01	1.00	1.62	.50	.013	.00	.00	PIPE
10039.640	204.356	1.039	205.395	10.76	8.23	1.05	206.45	.00	1.26	1.38	1.500	.000	.00	0 .0
.285	.1850					.0145	.00	1.04	1.49	.50	.013	.00	.00	PIPE
10039.920	204.409	1.086	205.495	10.76	7.85	.96	206.45	.00	1.26	1.34	1.500	.000	.00	0 .0
.209	.1850					.0130	.00	1.09	1.37	.50	.013	.00	.00	PIPE
10040.130	204.447	1.137	205.584	10.76	7.48	.87	206.45	.00	1.26	1.28	1.500	.000	.00	0 .0
.133	.1850					.0117	.00	1.14	1.25	.50	.013	.00	.00	PIPE
10040.270	204.472	1.193	205.665	10.76	7.13	.79	206.46	.00	1.26	1.21	1.500	.000	.00	0 .0
.044	.1850					.0106	.00	1.19	1.13	.50	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10040.310	204.480	1.258	205.738	10.76	6.80	.72	206.46	.00	1.26	1.10	1.500	.000	.00	0 .0
WALL	ENTRANCE													
10040.310	204.480	2.519	206.999	10.76	1.07	.02	207.02	.00	.61	4.00	6.000	4.000	.00	0 .0
1.401	.0825					.0001	.00	2.52	.12	.23	.013	.00	.00	BOX
10041.710	204.596	2.402	206.998	10.76	1.12	.02	207.02	.00	.61	4.00	6.000	4.000	.00	0 .0
1.333	.0825					.0001	.00	2.40	.13	.23	.013	.00	.00	BOX
10043.040	204.706	2.290	206.996	10.76	1.17	.02	207.02	.00	.61	4.00	6.000	4.000	.00	0 .0
.521	.0825					.0001	.00	2.29	.14	.23	.013	.00	.00	BOX
10043.560	204.748	2.247	206.995	10.76	1.20	.02	207.02	.00	.61	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10043.560	204.748	.085	204.834	10.76	31.49	15.40	220.23	.00	.61	4.00	6.000	4.000	.00	0 .0
.057	.0825					2.1328	.12	.09	18.99	.23	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.13279														
10043.620	204.753	.085	204.839	10.76	31.49	15.40	220.24	.00	.61	4.00	6.000	4.000	.00	0 .0
.688	.0825					2.3132	1.59	.09	18.99	.23	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.31321														
10044.310	204.810	.081	204.891	10.76	33.03	16.94	221.83	.00	.61	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10044.310	204.810	.360	205.170	10.76	32.94	16.85	222.02	.00	1.26	1.28	1.500	.000	.00	1 .0
27.452	.6594					.6427	17.64	.36	11.50	.36	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10071.760	222.912	.363	223.275	10.76	32.52	16.42	239.70	.00	1.26	1.29	1.500	.000	.00	1 .0
21.769	.6594					.5914	12.87	.36	11.29	.36	.013	.00	.00	PIPE
10093.530	237.267	.376	237.643	10.76	31.01	14.93	252.57	.00	1.26	1.30	1.500	.000	.00	1 .0
9.477	.6594					.5176	4.90	.38	10.58	.36	.013	.00	.00	PIPE
10103.010	243.516	.389	243.905	10.76	29.56	13.57	257.48	.00	1.26	1.31	1.500	.000	.00	1 .0
5.902	.6594					.4526	2.67	.39	9.90	.36	.013	.00	.00	PIPE
10108.910	247.408	.402	247.810	10.76	28.19	12.34	260.15	.00	1.26	1.33	1.500	.000	.00	1 .0
4.202	.6594					.3958	1.66	.40	9.27	.36	.013	.00	.00	PIPE
10113.110	250.179	.416	250.595	10.76	26.88	11.22	261.81	.00	1.26	1.34	1.500	.000	.00	1 .0
3.212	.6594					.3463	1.11	.42	8.68	.36	.013	.00	.00	PIPE
10116.320	252.297	.430	252.727	10.76	25.63	10.20	262.92	.00	1.26	1.36	1.500	.000	.00	1 .0
2.558	.6594					.3032	.78	.43	8.12	.36	.013	.00	.00	PIPE
10118.880	253.983	.446	254.429	10.76	24.43	9.27	263.70	.00	1.26	1.37	1.500	.000	.00	1 .0
2.102	.6594					.2655	.56	.45	7.60	.36	.013	.00	.00	PIPE
10120.980	255.369	.461	255.830	10.76	23.30	8.43	264.26	.00	1.26	1.38	1.500	.000	.00	1 .0
1.757	.6594					.2323	.41	.46	7.11	.36	.013	.00	.00	PIPE
10122.740	256.527	.477	257.004	10.76	22.21	7.66	264.67	.00	1.26	1.40	1.500	.000	.00	1 .0
1.490	.6594					.2035	.30	.48	6.65	.36	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10124.230	257.510	.494	258.004	10.76	21.18	6.96	264.97	.00	1.26	1.41	1.500	.000	.00	1 .0
1.278	.6594					.1784	.23	.49	6.22	.36	.013	.00	.00	PIPE
10125.510	258.353	.512	258.865	10.76	20.19	6.33	265.20	.00	1.26	1.42	1.500	.000	.00	1 .0
1.108	.6594					.1563	.17	.51	5.81	.36	.013	.00	.00	PIPE
10126.620	259.084	.530	259.614	10.76	19.25	5.76	265.37	.00	1.26	1.43	1.500	.000	.00	1 .0
.965	.6594					.1370	.13	.53	5.43	.36	.013	.00	.00	PIPE
10127.580	259.720	.549	260.270	10.76	18.36	5.23	265.50	.00	1.26	1.45	1.500	.000	.00	1 .0
.845	.6594					.1202	.10	.55	5.08	.36	.013	.00	.00	PIPE
10128.430	260.278	.569	260.847	10.76	17.50	4.76	265.60	.00	1.26	1.46	1.500	.000	.00	1 .0
.744	.6594					.1054	.08	.57	4.75	.36	.013	.00	.00	PIPE
10129.170	260.769	.589	261.358	10.76	16.69	4.32	265.68	.00	1.26	1.47	1.500	.000	.00	1 .0
.656	.6594					.0924	.06	.59	4.43	.36	.013	.00	.00	PIPE
10129.830	261.201	.610	261.812	10.76	15.91	3.93	265.74	.00	1.26	1.47	1.500	.000	.00	1 .0
.578	.6594					.0811	.05	.61	4.14	.36	.013	.00	.00	PIPE
10130.400	261.583	.633	262.216	10.76	15.17	3.57	265.79	.00	1.26	1.48	1.500	.000	.00	1 .0
.514	.6594					.0713	.04	.63	3.86	.36	.013	.00	.00	PIPE
10130.920	261.921	.656	262.577	10.76	14.46	3.25	265.83	.00	1.26	1.49	1.500	.000	.00	1 .0
.455	.6594					.0626	.03	.66	3.61	.36	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10131.370	262.221	.680	262.901	10.76	13.79	2.95	265.85	.00	1.26	1.49	1.500	.000	.00	1 .0
.401	.6594					.0551	.02	.68	3.36	.36	.013	.00	.00	PIPE
10131.770	262.486	.706	263.192	10.76	13.15	2.69	265.88	.00	1.26	1.50	1.500	.000	.00	1 .0
.355	.6594					.0485	.02	.71	3.13	.36	.013	.00	.00	PIPE
10132.130	262.720	.733	263.453	10.76	12.54	2.44	265.89	.00	1.26	1.50	1.500	.000	.00	1 .0
JUNCT STR	.0825					.0537	.21	.73	2.92		.013	.00	.00	PIPE
10136.130	263.050	.636	263.686	9.79	13.73	2.93	266.61	.00	1.21	1.48	1.500	.000	.00	1 .0
8.312	.0860					.0585	.49	.64	3.49	.58	.013	.00	.00	PIPE
10144.440	263.765	.657	264.422	9.79	13.14	2.68	267.10	.00	1.21	1.49	1.500	.000	.00	1 .0
6.385	.0860					.0516	.33	.66	3.27	.58	.013	.00	.00	PIPE
10150.830	264.315	.681	264.996	9.79	12.53	2.44	267.43	.00	1.21	1.49	1.500	.000	.00	1 .0
4.811	.0860					.0454	.22	.68	3.05	.58	.013	.00	.00	PIPE
10155.640	264.728	.707	265.436	9.79	11.95	2.22	267.65	.00	1.21	1.50	1.500	.000	.00	1 .0
3.805	.0860					.0399	.15	.71	2.85	.58	.013	.00	.00	PIPE
10159.440	265.056	.733	265.789	9.79	11.39	2.01	267.80	.00	1.21	1.50	1.500	.000	.00	1 .0
3.047	.0860					.0351	.11	.73	2.65	.58	.013	.00	.00	PIPE
10162.490	265.318	.761	266.079	9.79	10.86	1.83	267.91	.00	1.21	1.50	1.500	.000	.00	1 .0
2.478	.0860					.0310	.08	.76	2.47	.58	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10164.970	265.531	.791	266.322	9.79	10.35	1.66	267.99	.00	1.21	1.50	1.500	.000	.00	1 .0
2.049	.0860					.0273	.06	.79	2.30	.58	.013	.00	.00	PIPE
10167.020	265.707	.822	266.530	9.79	9.87	1.51	268.04	.00	1.21	1.49	1.500	.000	.00	1 .0
1.704	.0860					.0241	.04	.82	2.13	.58	.013	.00	.00	PIPE
10168.720	265.854	.854	266.708	9.79	9.41	1.38	268.08	.00	1.21	1.49	1.500	.000	.00	1 .0
1.406	.0860					.0213	.03	.85	1.98	.58	.013	.00	.00	PIPE
10170.130	265.975	.888	266.863	9.79	8.98	1.25	268.11	.00	1.21	1.47	1.500	.000	.00	1 .0
1.142	.0860					.0188	.02	.89	1.84	.58	.013	.00	.00	PIPE
10171.270	266.073	.925	266.998	9.79	8.56	1.14	268.14	.00	1.21	1.46	1.500	.000	.00	1 .0
.942	.0860					.0167	.02	.93	1.70	.58	.013	.00	.00	PIPE
10172.210	266.154	.963	267.118	9.79	8.16	1.03	268.15	.00	1.21	1.44	1.500	.000	.00	1 .0
.743	.0860					.0148	.01	.96	1.57	.58	.013	.00	.00	PIPE
10172.950	266.218	1.004	267.223	9.79	7.78	.94	268.16	.00	1.21	1.41	1.500	.000	.00	1 .0
.568	.0860					.0132	.01	1.00	1.45	.58	.013	.00	.00	PIPE
10173.520	266.267	1.048	267.315	9.79	7.42	.85	268.17	.00	1.21	1.38	1.500	.000	.00	1 .0
.399	.0860					.0118	.00	1.05	1.33	.58	.013	.00	.00	PIPE
10173.920	266.302	1.096	267.398	9.79	7.07	.78	268.17	.00	1.21	1.33	1.500	.000	.00	1 .0
.246	.0860					.0105	.00	1.10	1.22	.58	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10174.170	266.323	1.148	267.471	9.79	6.74	.71	268.18	.00	1.21	1.27	1.500	.000	.00	1 .0
.082	.0860				.0095	.00	1.15	1.11	.58	.013	.00	.00		PIPE
10174.250	266.330	1.207	267.537	9.79	6.42	.64	268.18	.00	1.21	1.19	1.500	.000	.00	1 .0
JUNCT STR	.0825				.0051	.02	1.21	1.00		.013	.00	.00		PIPE
10178.250	266.660	1.940	268.600	3.68	2.08	.07	268.67	.00	.73	.00	1.500	.000	.00	1 .0
5.217	.0855				.0012	.01	1.94	.00	.35	.013	.00	.00		PIPE
10183.470	267.106	1.500	268.606	3.68	2.08	.07	268.67	.00	.73	.00	1.500	.000	.00	1 .0
1.566	.0855				.0011	.00	1.50	.00	.35	.013	.00	.00		PIPE
10185.030	267.240	1.360	268.600	3.68	2.18	.07	268.67	.00	.73	.87	1.500	.000	.00	1 .0
.860	.0855				.0011	.00	1.36	.28	.35	.013	.00	.00		PIPE
10185.890	267.314	1.280	268.594	3.68	2.29	.08	268.68	.00	.73	1.06	1.500	.000	.00	1 .0
.324	.0855				.0012	.00	1.28	.33	.35	.013	.00	.00		PIPE
10186.220	267.341	1.213	268.555	3.68	2.40	.09	268.64	.00	.73	1.18	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
10186.220	267.341	.388	267.729	3.68	10.15	1.60	269.33	.00	.73	1.31	1.500	.000	.00	1 .0
.004	.0855				.0534	.00	.39	3.40	.35	.013	.00	.00		PIPE
10186.220	267.342	.401	267.743	3.68	9.66	1.45	269.19	.00	.73	1.33	1.500	.000	.00	1 .0
3.025	.0855				.0466	.14	.40	3.18	.35	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10189.250	267.600	.415	268.016	3.68	9.21	1.32	269.33	.00	.73	1.34	1.500	.000	.00	1 .0
2.344	.0855				.0408	.10	.42	2.98	.35	.013	.00	.00		PIPE
10191.590	267.801	.430	268.231	3.68	8.78	1.20	269.43	.00	.73	1.36	1.500	.000	.00	1 .0
1.886	.0855				.0357	.07	.43	2.79	.35	.013	.00	.00		PIPE
10193.480	267.962	.445	268.407	3.68	8.38	1.09	269.50	.00	.73	1.37	1.500	.000	.00	1 .0
1.549	.0855				.0313	.05	.45	2.61	.35	.013	.00	.00		PIPE
10195.030	268.095	.460	268.555	3.68	7.99	.99	269.55	.00	.73	1.38	1.500	.000	.00	1 .0
1.272	.0855				.0273	.03	.46	2.44	.35	.013	.00	.00		PIPE
10196.300	268.203	.476	268.680	3.68	7.61	.90	269.58	.00	.73	1.40	1.500	.000	.00	1 .0
1.054	.0855				.0240	.03	.48	2.28	.35	.013	.00	.00		PIPE
10197.350	268.293	.493	268.787	3.68	7.26	.82	269.61	.00	.73	1.41	1.500	.000	.00	1 .0
.874	.0855				.0210	.02	.49	2.13	.35	.013	.00	.00		PIPE
10198.230	268.368	.511	268.879	3.68	6.92	.74	269.62	.00	.73	1.42	1.500	.000	.00	1 .0
.739	.0855				.0184	.01	.51	2.00	.35	.013	.00	.00		PIPE
10198.960	268.432	.529	268.961	3.68	6.60	.68	269.64	.00	.73	1.43	1.500	.000	.00	1 .0
.612	.0855				.0161	.01	.53	1.86	.35	.013	.00	.00		PIPE
10199.580	268.484	.548	269.032	3.68	6.29	.61	269.65	.00	.73	1.44	1.500	.000	.00	1 .0
.503	.0855				.0141	.01	.55	1.74	.35	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:48:50

MAPLE CANYON
SYSTEM 7A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10200.080	268.527	.568	269.095	3.68	6.00	.56	269.65	.00	.73	1.46	1.500	.000	.00	1 .0
.422	.0855					.0124	.01	.57	1.63	.35	.013	.00	.00	PIPE
10200.500	268.563	.588	269.151	3.68	5.72	.51	269.66	.00	.73	1.46	1.500	.000	.00	1 .0
.338	.0855					.0109	.00	.59	1.52	.35	.013	.00	.00	PIPE
10200.840	268.592	.609	269.201	3.68	5.45	.46	269.66	.00	.73	1.47	1.500	.000	.00	1 .0
.250	.0855					.0096	.00	.61	1.42	.35	.013	.00	.00	PIPE
10201.090	268.613	.632	269.245	3.68	5.20	.42	269.67	.00	.73	1.48	1.500	.000	.00	1 .0
.197	.0855					.0084	.00	.63	1.33	.35	.013	.00	.00	PIPE
10201.290	268.630	.655	269.285	3.68	4.96	.38	269.67	.00	.73	1.49	1.500	.000	.00	1 .0
.137	.0855					.0074	.00	.66	1.24	.35	.013	.00	.00	PIPE
10201.420	268.642	.679	269.321	3.68	4.73	.35	269.67	.00	.73	1.49	1.500	.000	.00	1 .0
.070	.0855					.0065	.00	.68	1.15	.35	.013	.00	.00	PIPE
10201.490	268.648	.705	269.353	3.68	4.51	.32	269.67	.00	.73	1.50	1.500	.000	.00	1 .0
.025	.0855					.0057	.00	.71	1.08	.35	.013	.00	.00	PIPE
10201.520	268.650	.733	269.383	3.68	4.29	.29	269.67	.00	.73	1.50	1.500	.000	.00	1 .0

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:49:16

MAPLE CANYON
SYSTEM 7B

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10009.500	266.490	1.500	267.990	5.70	3.23	.16	268.15	.00	.92	.00	1.500	.000	.00	1 .0
.000	.0199				.0029	.00	1.50	.00	.65	.013	.00	.00		PIPE
10009.500	266.490	1.500	267.990	5.70	3.23	.16	268.15	.00	.92	.00	1.500	.000	.00	1 .0
7.139	.0199				.0027	.02	1.50	.00	.65	.013	.00	.00		PIPE
10016.640	266.632	1.360	267.992	5.70	3.38	.18	268.17	.00	.92	.87	1.500	.000	.00	1 .0
3.606	.0199				.0027	.01	1.36	.43	.65	.013	.00	.00		PIPE
10020.250	266.704	1.280	267.984	5.70	3.55	.20	268.18	.00	.92	1.06	1.500	.000	.00	1 .0
2.785	.0199				.0029	.01	1.28	.51	.65	.013	.00	.00		PIPE
10023.030	266.760	1.213	267.973	5.70	3.72	.22	268.19	.00	.92	1.18	1.500	.000	.00	1 .0
2.180	.0199				.0032	.01	1.21	.58	.65	.013	.00	.00		PIPE
10025.210	266.803	1.155	267.958	5.70	3.90	.24	268.19	.00	.92	1.26	1.500	.000	.00	1 .0
1.790	.0199				.0035	.01	1.16	.64	.65	.013	.00	.00		PIPE
10027.000	266.839	1.102	267.941	5.70	4.09	.26	268.20	.00	.92	1.32	1.500	.000	.00	1 .0
.070	.0199				.0037	.00	1.10	.70	.65	.013	.00	.00		PIPE
10027.070	266.840	1.100	267.940	5.70	4.10	.26	268.20	.00	.92	1.33	1.500	.000	.00	1 .0

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System 7A

Q =	10.76	cfs
V =	15.33	ft/sec
D =	0.628	ft
A =	0.701892	ft²
Ye =	0.592407	ft
g =	32.2	ft/sec²
Fr =	3.509976	
From Figure 7-2		
Ho =	4.277207	
HLoss/Ho	0.58	
HLoss =	2.48078	
Remaining Energy	1.796427	
Area Above Sill		
Height	0.2	ft
Width	8.5	ft
Area Above Sill	1.7	in
Depth of Sill	0.916667	ft
Total Depth =	1.116667	ft
Velocity	6.329412	ft/sec
TH	1.738739	OK

Figure 7-2

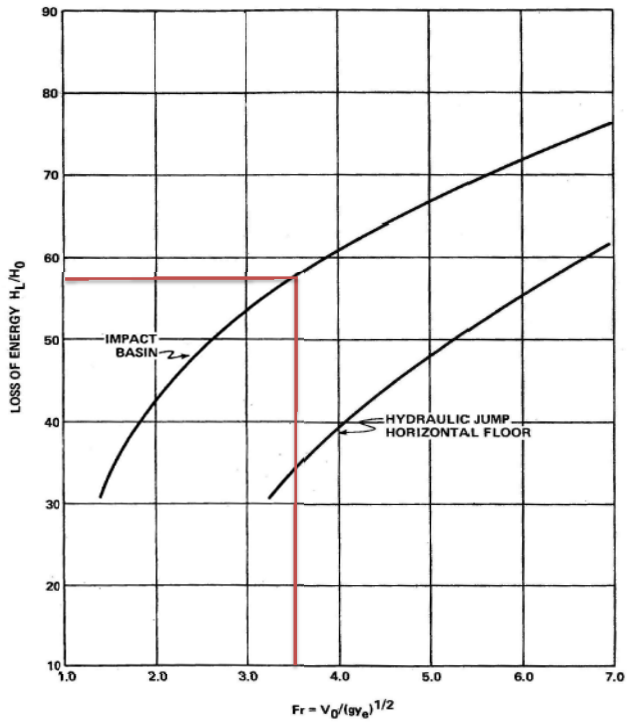


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 8
(3RD & PALM)

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Worksheet for 8H Upgrade

Project Description

Solve For	Efficiency

Input Data

Discharge		1.28	ft³/s
Slope		14.29	%
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Grate Width		4.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	99.42	%
Intercepted Flow	1.27	ft³/s
Bypass Flow	0.01	ft³/s
Spread	4.69	ft
Depth	1.13	in
Flow Area	0.22	ft²
Gutter Depression	0.00	in
Total Depression	0.00	in
Velocity	5.83	ft/s
Splash Over Velocity	8.15	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.03	
Grate Flow Ratio	0.99	
Active Grate Length	2.01	ft

Worksheet for 8H Existing

Project Description

Solve For	Efficiency

Input Data

Discharge		1.28	ft³/s
Slope		14.29	%
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency		77.97	%
Intercepted Flow		1.00	ft³/s
Bypass Flow		0.28	ft³/s
Spread		4.69	ft
Depth		1.13	in
Flow Area		0.22	ft²
Gutter Depression		0.00	in
Total Depression		0.00	in
Velocity		5.83	ft/s
Splash Over Velocity		8.15	ft/s
Frontal Flow Factor		1.00	
Side Flow Factor		0.03	
Grate Flow Ratio		0.77	
Active Grate Length		2.01	ft

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:31

MAPLE CANYON
SYSTEM 8

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
.000	256.040	1.500	257.540	3.76	2.13	.07	257.61	.00	.74	.00	1.500	.000	.00	1 .0
.000	.0246					.0013	.00	1.50	.00	.49	.013	.00	.00	PIPE
.000	256.040	1.500	257.540	3.76	2.13	.07	257.61	.00	.74	.00	1.500	.000	.00	1 .0
5.629	.0246					.0012	.01	1.50	.00	.49	.013	.00	.00	PIPE
5.629	256.179	1.360	257.539	3.76	2.23	.08	257.62	.00	.74	.87	1.500	.000	.00	1 .0
3.081	.0246					.0012	.00	1.36	.28	.49	.013	.00	.00	PIPE
8.709	256.254	1.280	257.534	3.76	2.34	.09	257.62	.00	.74	1.06	1.500	.000	.00	1 .0
2.504	.0246					.0013	.00	1.28	.34	.49	.013	.00	.00	PIPE
11.213	256.316	1.213	257.529	3.76	2.46	.09	257.62	.00	.74	1.18	1.500	.000	.00	1 .0
2.093	.0246					.0014	.00	1.21	.38	.49	.013	.00	.00	PIPE
13.307	256.368	1.155	257.523	3.76	2.58	.10	257.63	.00	.74	1.26	1.500	.000	.00	1 .0
1.850	.0246					.0015	.00	1.16	.42	.49	.013	.00	.00	PIPE
15.156	256.413	1.102	257.515	3.76	2.70	.11	257.63	.00	.74	1.32	1.500	.000	.00	1 .0
1.094	.0246					.0017	.00	1.10	.46	.49	.013	.00	.00	PIPE
16.250	256.440	1.070	257.510	3.76	2.79	.12	257.63	.00	.74	1.36	1.500	.000	.00	1 .0

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System 08 - Velocity is too low for calculations

Q =	3.76	cfs
V =	2.79	ft/sec
D =	1.07	ft
A =	1.34767	ft²
Ye =	0.820875	ft
g =	32.2	ft/sec²
Fr =	0.542673	
From Figure 7-2		
Ho =	1.190871	
HLoss/Ho	0	
HLoss =	0	
Remaining Energy	1.190871	
Area Above Sill		
Height	0	ft
Width	0	ft
Area Above Sill	0	in
Depth of Sill	0.916667	ft
Total Depth =	0.916667	ft
Velocity	#DIV/0!	ft/sec
TH	#DIV/0!	OK

Figure 7-2

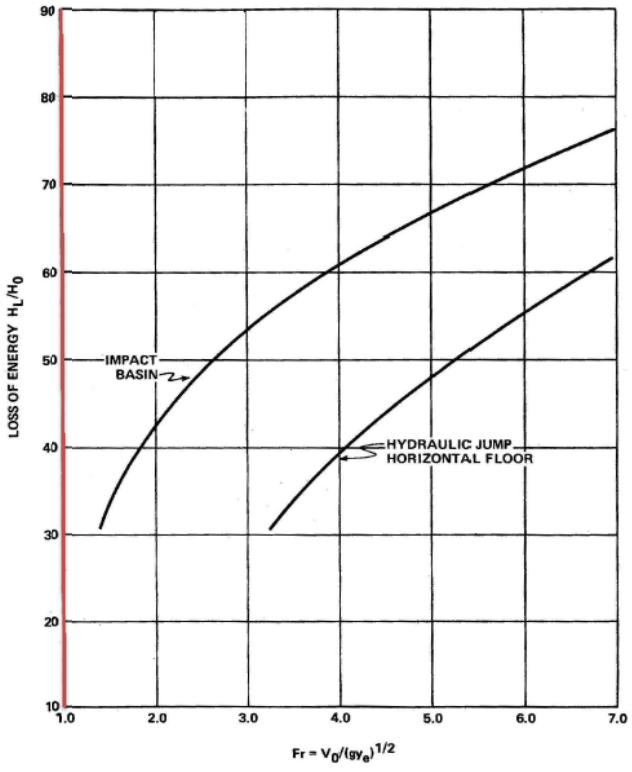


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
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SYSTEM 9
(3RD BETWEEN OLIVE & PALM)

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Worksheet for 9 Existing

Project Description

Solve For	Spread

Input Data

Discharge		1.14	ft³/s
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Grate Width		1.00	ft
Grate Length		1.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	17.27	ft
Depth	4.15	in
Gutter Depression	0.00	in
Total Depression	0.00	in
Open Grate Area	0.45	ft²
Active Grate Weir Length	2.00	ft

Worksheet for 9 Upgrade

Project Description

Solve For	Spread

Input Data

Discharge		1.14	ft³/s
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Grate Width		2.00	ft
Grate Length		3.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	10.56	ft
Depth	2.54	in
Gutter Depression	0.00	in
Total Depression	0.00	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
20001.990	255.340	1.500	256.840	2.42	1.37	.03	256.87	.00	.59	.00	1.500	.000	.00	0 .0
.000	.0200					.0005	.00	1.50	.00	.41	.013	.00	.00	PIPE
20001.990	255.340	1.500	256.840	2.42	1.37	.03	256.87	.00	.59	.00	1.500	.000	.00	0 .0
6.984	.0200					.0005	.00	1.50	.00	.41	.013	.00	.00	PIPE
20008.970	255.479	1.360	256.840	2.42	1.44	.03	256.87	.00	.59	.87	1.500	.000	.00	0 .0
3.941	.0200					.0005	.00	1.36	.18	.41	.013	.00	.00	PIPE
20012.920	255.558	1.280	256.838	2.42	1.51	.04	256.87	.00	.59	1.06	1.500	.000	.00	0 .0
3.266	.0200					.0005	.00	1.28	.22	.41	.013	.00	.00	PIPE
20016.180	255.623	1.213	256.836	2.42	1.58	.04	256.88	.00	.59	1.18	1.500	.000	.00	0 .0
2.791	.0200					.0006	.00	1.21	.24	.41	.013	.00	.00	PIPE
20018.970	255.679	1.155	256.834	2.42	1.66	.04	256.88	.00	.59	1.26	1.500	.000	.00	0 .0
2.521	.0200					.0006	.00	1.16	.27	.41	.013	.00	.00	PIPE
20021.490	255.729	1.102	256.831	2.42	1.74	.05	256.88	.00	.59	1.32	1.500	.000	.00	0 .0
.535	.0200					.0007	.00	1.10	.30	.41	.013	.00	.00	PIPE
20022.030	255.740	1.091	256.831	2.42	1.76	.05	256.88	.00	.59	1.34	1.500	.000	.00	0 .0
JUNCT STR	.0840					.0005	.00	1.09	.31		.013	.00	.00	PIPE
20024.530	255.950	.958	256.908	1.14	.96	.01	256.92	.00	.40	1.44	1.500	.000	.00	0 .0
1.863	.0200					.0002	.00	.96	.19	.28	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
20026.390	255.987	.920	256.907	1.14	1.00	.02	256.92	.00	.40	1.46	1.500	.000	.00	0 .0
1.744	.0200					.0003	.00	.92	.20	.28	.013	.00	.00	PIPE
20028.140	256.022	.884	256.906	1.14	1.05	.02	256.92	.00	.40	1.48	1.500	.000	.00	0 .0
1.639	.0200					.0003	.00	.88	.22	.28	.013	.00	.00	PIPE
20029.780	256.055	.850	256.905	1.14	1.10	.02	256.92	.00	.40	1.49	1.500	.000	.00	0 .0
1.582	.0200					.0003	.00	.85	.23	.28	.013	.00	.00	PIPE
20031.360	256.087	.817	256.904	1.14	1.16	.02	256.92	.00	.40	1.49	1.500	.000	.00	0 .0
1.422	.0200					.0004	.00	.82	.25	.28	.013	.00	.00	PIPE
20032.780	256.115	.787	256.902	1.14	1.21	.02	256.92	.00	.40	1.50	1.500	.000	.00	0 .0
1.365	.0200					.0004	.00	.79	.27	.28	.013	.00	.00	PIPE
20034.140	256.142	.758	256.900	1.14	1.27	.03	256.93	.00	.40	1.50	1.500	.000	.00	0 .0
1.307	.0200					.0005	.00	.76	.29	.28	.013	.00	.00	PIPE
20035.450	256.168	.730	256.899	1.14	1.34	.03	256.93	.00	.40	1.50	1.500	.000	.00	0 .0
1.246	.0200					.0006	.00	.73	.31	.28	.013	.00	.00	PIPE
20036.700	256.193	.703	256.896	1.14	1.40	.03	256.93	.00	.40	1.50	1.500	.000	.00	0 .0
1.133	.0200					.0006	.00	.70	.33	.28	.013	.00	.00	PIPE
20037.830	256.216	.678	256.894	1.14	1.47	.03	256.93	.00	.40	1.49	1.500	.000	.00	0 .0
1.070	.0200					.0007	.00	.68	.36	.28	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
20038.900	256.237	.654	256.892	1.14	1.54	.04	256.93	.00	.40	1.49	1.500	.000	.00	0 .0
1.059	.0200					.0008	.00	.65	.38	.28	.013	.00	.00	PIPE
20039.960	256.259	.630	256.889	1.14	1.62	.04	256.93	.00	.40	1.48	1.500	.000	.00	0 .0
.941	.0200					.0009	.00	.63	.41	.28	.013	.00	.00	PIPE
20040.900	256.277	.608	256.886	1.14	1.69	.04	256.93	.00	.40	1.47	1.500	.000	.00	0 .0
.873	.0200					.0011	.00	.61	.44	.28	.013	.00	.00	PIPE
20041.770	256.295	.587	256.882	1.14	1.78	.05	256.93	.00	.40	1.46	1.500	.000	.00	0 .0
.855	.0200					.0012	.00	.59	.47	.28	.013	.00	.00	PIPE
20042.630	256.312	.566	256.878	1.14	1.86	.05	256.93	.00	.40	1.45	1.500	.000	.00	0 .0
.693	.0200					.0014	.00	.57	.51	.28	.013	.00	.00	PIPE
20043.320	256.326	.547	256.873	1.14	1.96	.06	256.93	.00	.40	1.44	1.500	.000	.00	0 .0
HYDRAULIC JUMP														
20043.320	256.326	.281	256.607	1.14	4.97	.38	256.99	.00	.40	1.17	1.500	.000	.00	0 .0
39.023	.0200					.0200	.78	.28	1.98	.28	.013	.00	.00	PIPE
20082.350	257.106	.281	257.388	1.14	4.97	.38	257.77	.00	.40	1.17	1.500	.000	.00	0 .0
20.484	.0200					.0195	.40	.28	1.98	.28	.013	.00	.00	PIPE
20102.830	257.516	.284	257.800	1.14	4.89	.37	258.17	.00	.40	1.18	1.500	.000	.00	0 .0
11.018	.0200					.0178	.20	.28	1.93	.28	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
20113.850	257.736	.294	258.031	1.14	4.66	.34	258.37	.00	.40	1.19	1.500	.000	.00	0 .0
4.701	.0200				.0156	.07	.29	1.81	.28	.013	.00	.00		PIPE
20118.550	257.830	.304	258.135	1.14	4.44	.31	258.44	.00	.40	1.21	1.500	.000	.00	0 .0
2.809	.0200				.0136	.04	.30	1.70	.28	.013	.00	.00		PIPE
20121.360	257.887	.314	258.201	1.14	4.24	.28	258.48	.00	.40	1.22	1.500	.000	.00	0 .0
1.773	.0200				.0119	.02	.31	1.59	.28	.013	.00	.00		PIPE
20123.130	257.922	.325	258.247	1.14	4.04	.25	258.50	.00	.40	1.24	1.500	.000	.00	0 .0
1.258	.0200				.0104	.01	.33	1.49	.28	.013	.00	.00		PIPE
20124.390	257.947	.336	258.283	1.14	3.85	.23	258.51	.00	.40	1.25	1.500	.000	.00	0 .0
.912	.0200				.0091	.01	.34	1.40	.28	.013	.00	.00		PIPE
20125.300	257.965	.347	258.313	1.14	3.67	.21	258.52	.00	.40	1.27	1.500	.000	.00	0 .0
.586	.0200				.0080	.00	.35	1.31	.28	.013	.00	.00		PIPE
20125.890	257.977	.359	258.336	1.14	3.50	.19	258.53	.00	.40	1.28	1.500	.000	.00	0 .0
.408	.0200				.0070	.00	.36	1.22	.28	.013	.00	.00		PIPE
20126.290	257.985	.371	258.356	1.14	3.34	.17	258.53	.00	.40	1.29	1.500	.000	.00	0 .0
.197	.0200				.0061	.00	.37	1.15	.28	.013	.00	.00		PIPE
20126.490	257.989	.384	258.373	1.14	3.18	.16	258.53	.00	.40	1.31	1.500	.000	.00	0 .0
.037	.0200				.0053	.00	.38	1.07	.28	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
20126.530	257.990	.399	258.389	1.14	3.03	.14	258.53	.00	.40	1.33	1.500	.000	.00	0 .0
WALL	ENTRANCE													
20126.530	257.990	.599	258.589	1.14	.48	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.178	-.1675				.0000	.00	.60	.11	.00	.013	.00	.00	BOX	
20126.710	257.960	.629	258.589	1.14	.45	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.186	-.1675				.0000	.00	.63	.10	.00	.013	.00	.00	BOX	
20126.890	257.929	.660	258.590	1.14	.43	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.195	-.1675				.0000	.00	.66	.09	.00	.013	.00	.00	BOX	
20127.090	257.897	.693	258.590	1.14	.41	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.205	-.1675				.0000	.00	.69	.09	.00	.013	.00	.00	BOX	
20127.290	257.862	.728	258.590	1.14	.39	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.217	-.1675				.0000	.00	.73	.08	.00	.013	.00	.00	BOX	
20127.510	257.826	.764	258.590	1.14	.37	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.227	-.1675				.0000	.00	.76	.08	.00	.013	.00	.00	BOX	
20127.740	257.788	.803	258.590	1.14	.36	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.238	-.1675				.0000	.00	.80	.07	.00	.013	.00	.00	BOX	
20127.970	257.748	.843	258.591	1.14	.34	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.250	-.1675				.0000	.00	.84	.06	.00	.013	.00	.00	BOX	

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
20128.220	257.706	.885	258.591	1.14	.32	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.264	-.1675				.0000	.00	.88	.06	.00	.013	.00	.00		BOX
20128.490	257.662	.929	258.591	1.14	.31	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.275	-.1675				.0000	.00	.93	.06	.00	.013	.00	.00		BOX
20128.760	257.616	.976	258.591	1.14	.29	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.291	-.1675				.0000	.00	.98	.05	.00	.013	.00	.00		BOX
20129.050	257.567	1.024	258.591	1.14	.28	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.305	-.1675				.0000	.00	1.02	.05	.00	.013	.00	.00		BOX
20129.360	257.516	1.076	258.591	1.14	.26	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.320	-.1675				.0000	.00	1.08	.05	.00	.013	.00	.00		BOX
20129.680	257.462	1.129	258.591	1.14	.25	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.338	-.1675				.0000	.00	1.13	.04	.00	.013	.00	.00		BOX
20130.020	257.406	1.186	258.592	1.14	.24	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.354	-.1675				.0000	.00	1.19	.04	.00	.013	.00	.00		BOX
20130.370	257.347	1.245	258.592	1.14	.23	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
.158	-.1675				.0000	.00	1.25	.04	.00	.013	.00	.00		BOX
20130.530	257.320	1.272	258.592	1.14	.22	.00	258.59	.00	.14	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
20130.530	257.320	1.273	258.593	1.14	.71 / .01	.01 / .0001	258.60 / .00	.00 / .40	.40 / .10	1.08 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.260	.2500														
20130.790	257.385	1.207	258.592	1.14	.75 / .01	.01 / .0001	258.60 / .00	.00 / .40	.40 / .12	1.19 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.229	.2500														
20131.020	257.442	1.149	258.591	1.14	.78 / .01	.01 / .0001	258.60 / .00	.00 / .40	.40 / .13	1.27 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.205	.2500														
20131.220	257.493	1.097	258.590	1.14	.82 / .01	.01 / .0002	258.60 / .00	.00 / .40	.40 / .14	1.33 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.188	.2500														
20131.410	257.540	1.049	258.589	1.14	.86 / .01	.01 / .0002	258.60 / .00	.00 / .40	.40 / .16	1.38 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.172	.2500														
20131.580	257.583	1.005	258.588	1.14	.90 / .01	.01 / .0002	258.60 / .00	.00 / .40	.40 / .17	1.41 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.158	.2500														
20131.740	257.623	.964	258.587	1.14	.95 / .01	.01 / .0002	258.60 / .00	.00 / .40	.40 / .18	1.44 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.146	.2500														
20131.890	257.660	.926	258.586	1.14	1.00 / .02	.02 / .0003	258.60 / .00	.00 / .40	.40 / .20	1.46 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.143	.2500														
20132.030	257.695	.889	258.584	1.14	1.04 / .02	.02 / .0003	258.60 / .00	.00 / .40	.40 / .21	1.47 / .15	1.500 / .013	.000 / .00	.00	0 / PIPE	.0
.129	.2500														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
20132.160	257.727	.855	258.582	1.14	1.10	.02	258.60	.00	.40	1.49	1.500	.000	.00	0 .0
.125	.2500					.0003	.00	.86	.23	.15	.013	.00	.00	PIPE
20132.280	257.759	.822	258.581	1.14	1.15	.02	258.60	.00	.40	1.49	1.500	.000	.00	0 .0
.115	.2500					.0004	.00	.82	.25	.15	.013	.00	.00	PIPE
20132.400	257.788	.791	258.579	1.14	1.20	.02	258.60	.00	.40	1.50	1.500	.000	.00	0 .0
.107	.2500					.0004	.00	.79	.27	.15	.013	.00	.00	PIPE
20132.510	257.814	.762	258.576	1.14	1.26	.02	258.60	.00	.40	1.50	1.500	.000	.00	0 .0
.102	.2500					.0005	.00	.76	.29	.15	.013	.00	.00	PIPE
20132.610	257.840	.734	258.574	1.14	1.32	.03	258.60	.00	.40	1.50	1.500	.000	.00	0 .0
.098	.2500					.0005	.00	.73	.31	.15	.013	.00	.00	PIPE
20132.710	257.864	.707	258.571	1.14	1.39	.03	258.60	.00	.40	1.50	1.500	.000	.00	0 .0
.041	.2500					.0006	.00	.71	.33	.15	.013	.00	.00	PIPE
20132.750	257.874	.682	258.557	1.14	1.46	.03	258.59	.00	.40	1.49	1.500	.000	.00	0 .0
HYDRAULIC JUMP														
20132.750	257.874	.204	258.079	1.14	7.90	.97	259.05	.00	.40	1.03	1.500	.000	.00	0 .0
.229	.2500					.0695	.02	.20	3.72	.15	.013	.00	.00	PIPE
20132.970	257.931	.211	258.142	1.14	7.51	.88	259.02	.00	.40	1.04	1.500	.000	.00	0 .0
.383	.2500					.0603	.02	.21	3.47	.15	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
20133.360	258.027	.218	258.245	1.14	7.16	.80	259.04	.00	.40	1.06	1.500	.000	.00	0 .0
.332	.2500					.0527	.02	.22	3.25	.15	.013	.00	.00	PIPE
20133.690	258.110	.225	258.335	1.14	6.83	.72	259.06	.00	.40	1.07	1.500	.000	.00	0 .0
.283	.2500					.0460	.01	.23	3.05	.15	.013	.00	.00	PIPE
20133.970	258.181	.233	258.414	1.14	6.51	.66	259.07	.00	.40	1.09	1.500	.000	.00	0 .0
.246	.2500					.0402	.01	.23	2.86	.15	.013	.00	.00	PIPE
20134.220	258.242	.241	258.483	1.14	6.21	.60	259.08	.00	.40	1.10	1.500	.000	.00	0 .0
.215	.2500					.0351	.01	.24	2.68	.15	.013	.00	.00	PIPE
20134.430	258.296	.249	258.545	1.14	5.92	.54	259.09	.00	.40	1.12	1.500	.000	.00	0 .0
.189	.2500					.0306	.01	.25	2.51	.15	.013	.00	.00	PIPE
20134.620	258.343	.257	258.600	1.14	5.64	.49	259.09	.00	.40	1.13	1.500	.000	.00	0 .0
.160	.2500					.0268	.00	.26	2.35	.15	.013	.00	.00	PIPE
20134.780	258.384	.266	258.650	1.14	5.38	.45	259.10	.00	.40	1.15	1.500	.000	.00	0 .0
.141	.2500					.0234	.00	.27	2.20	.15	.013	.00	.00	PIPE
20134.920	258.419	.275	258.694	1.14	5.13	.41	259.10	.00	.40	1.16	1.500	.000	.00	0 .0
.123	.2500					.0204	.00	.28	2.07	.15	.013	.00	.00	PIPE
20135.050	258.449	.284	258.733	1.14	4.89	.37	259.10	.00	.40	1.18	1.500	.000	.00	0 .0
.102	.2500					.0178	.00	.28	1.93	.15	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
20135.150	258.475	.294	258.769	1.14	4.66	.34	259.11	.00	.40	1.19	1.500	.000	.00	0 .0
.088	.2500					.0156	.00	.29	1.81	.15	.013	.00	.00	PIPE
20135.240	258.497	.304	258.801	1.14	4.44	.31	259.11	.00	.40	1.21	1.500	.000	.00	0 .0
.076	.2500					.0136	.00	.30	1.70	.15	.013	.00	.00	PIPE
20135.310	258.516	.314	258.830	1.14	4.24	.28	259.11	.00	.40	1.22	1.500	.000	.00	0 .0
.061	.2500					.0119	.00	.31	1.59	.15	.013	.00	.00	PIPE
20135.370	258.531	.325	258.856	1.14	4.04	.25	259.11	.00	.40	1.24	1.500	.000	.00	0 .0
.051	.2500					.0104	.00	.33	1.49	.15	.013	.00	.00	PIPE
20135.420	258.544	.336	258.880	1.14	3.85	.23	259.11	.00	.40	1.25	1.500	.000	.00	0 .0
.041	.2500					.0091	.00	.34	1.40	.15	.013	.00	.00	PIPE
20135.460	258.554	.347	258.901	1.14	3.67	.21	259.11	.00	.40	1.27	1.500	.000	.00	0 .0
.029	.2500					.0080	.00	.35	1.31	.15	.013	.00	.00	PIPE
20135.490	258.561	.359	258.920	1.14	3.50	.19	259.11	.00	.40	1.28	1.500	.000	.00	0 .0
.021	.2500					.0070	.00	.36	1.22	.15	.013	.00	.00	PIPE
20135.520	258.567	.371	258.938	1.14	3.34	.17	259.11	.00	.40	1.29	1.500	.000	.00	0 .0
.012	.2500					.0061	.00	.37	1.15	.15	.013	.00	.00	PIPE
20135.530	258.569	.384	258.954	1.14	3.18	.16	259.11	.00	.40	1.31	1.500	.000	.00	0 .0
.002	.2500					.0053	.00	.38	1.07	.15	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 6:59:52

MAPLE CANYON
SYSTEM 9

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
20135.530	258.570	.399	258.969	1.14	3.03	.14	259.11	.00	.40	1.33	1.500	.000	.00	0 .0

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SYSTEM 10
(3RD & OLIVE)

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Worksheet for 10 Existing

Project Description

Solve For	Spread

Input Data

Discharge		5.96	ft³/s
Gutter Width		3.00	ft
Gutter Cross Slope		4.17	%
Road Cross Slope		2.00	%
Grate Width		3.00	ft
Grate Length		4.00	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	23.23	ft
Depth	6.35	in
Gutter Depression	0.78	in
Total Depression	0.78	in
Open Grate Area	5.40	ft²
Active Grate Weir Length	7.00	ft

Worksheet for 10 NEW

Project Description

Solve For	Efficiency

Input Data

Discharge	3.68	ft³/s
Slope	1.76	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	4.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	52.04	%
Intercepted Flow	1.92	ft³/s
Bypass Flow	1.76	ft³/s
Spread	9.71	ft
Depth	3.47	in
Flow Area	1.01	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	3.63	ft/s
Equivalent Cross Slope	0.1508	ft/ft
Length Factor	0.34	
Total Interception Length	11.93	ft

Worksheet for ~2015 10 Downstream - Sag

Project Description

Solve For	Spread

Input Data

Discharge		4.19	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		5.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	19.13	ft
Depth	5.73	in
Gutter Depression	1.14	in
Total Depression	5.14	in

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Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10025.250	172.800	.567	173.367	6.11	9.99	1.55	174.92	.00	.95	1.45	1.500	.000	.00	1 .0
15.729	.0418					.0347	.55	.57	2.72	.55	.013	.00	.00	PIPE
10040.980	173.457	.585	174.043	6.11	9.57	1.42	175.47	.00	.95	1.46	1.500	.000	.00	1 .0
9.755	.0418					.0307	.30	.59	2.56	.55	.013	.00	.00	PIPE
10050.730	173.865	.606	174.471	6.11	9.13	1.29	175.77	.00	.95	1.47	1.500	.000	.00	1 .0
6.432	.0418					.0269	.17	.61	2.39	.55	.013	.00	.00	PIPE
10057.160	174.134	.628	174.762	6.11	8.70	1.18	175.94	.00	.95	1.48	1.500	.000	.00	1 .0
4.624	.0418					.0236	.11	.63	2.23	.55	.013	.00	.00	PIPE
10061.790	174.327	.651	174.978	6.11	8.30	1.07	176.05	.00	.95	1.49	1.500	.000	.00	1 .0
3.482	.0418					.0208	.07	.65	2.08	.55	.013	.00	.00	PIPE
10065.270	174.473	.675	175.148	6.11	7.91	.97	176.12	.00	.95	1.49	1.500	.000	.00	1 .0
2.692	.0418					.0183	.05	.68	1.94	.55	.013	.00	.00	PIPE
10067.960	174.585	.700	175.286	6.11	7.54	.88	176.17	.00	.95	1.50	1.500	.000	.00	1 .0
2.073	.0418					.0161	.03	.70	1.81	.55	.013	.00	.00	PIPE
10070.040	174.672	.727	175.399	6.11	7.19	.80	176.20	.00	.95	1.50	1.500	.000	.00	1 .0
1.665	.0418					.0141	.02	.73	1.68	.55	.013	.00	.00	PIPE
10071.700	174.742	.754	175.496	6.11	6.86	.73	176.23	.00	.95	1.50	1.500	.000	.00	1 .0
1.274	.0418					.0124	.02	.75	1.57	.55	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10072.970	174.795	.783	175.578	6.11	6.54 / .66 / .0110	176.24 / .01	.00 / .78	.95 / 1.46	1.50 / .55	1.500 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
.953	.0418													
10073.930	174.835	.814	175.649	6.11	6.24 / .60 / .0097	176.25 / .01	.00 / .81	.95 / 1.36	1.49 / .55	1.500 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
.713	.0418													
10074.640	174.865	.846	175.711	6.11	5.95 / .55 / .0086	176.26 / .00	.00 / .85	.95 / 1.26	1.49 / .55	1.500 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
.479	.0418													
10075.120	174.884	.880	175.765	6.11	5.67 / .50 / .0076	176.26 / .00	.00 / .88	.95 / 1.17	1.48 / .55	1.500 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
.303	.0418													
10075.420	174.897	.915	175.812	6.11	5.40 / .45 / .0067	176.27 / .00	.00 / .92	.95 / 1.08	1.46 / .55	1.500 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
.068	.0418													
10075.490	174.900	.955	175.855	6.11	5.15 / .41 / .0067	176.27 / .00	.00 / .95	.95 / 1.44	1.44 / .55	1.500 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
WALL	ENTRANCE													
10075.490	174.900	1.552	176.452	6.11	.98 / .02 / .0001	176.47 / .00	.00 / 1.55	.42 / .14	4.00 / .16	6.000 / .013	4.000 / .00	.00 / .00	0 / BOX	.0
.833	.0850													
10076.320	174.971	1.480	176.451	6.11	1.03 / .02 / .0001	176.47 / .00	.00 / 1.48	.42 / .15	4.00 / .16	6.000 / .013	4.000 / .00	.00 / .00	0 / BOX	.0
.792	.0850													
10077.120	175.038	1.411	176.449	6.11	1.08 / .02 / .0001	176.47 / .00	.00 / 1.41	.42 / .16	4.00 / .16	6.000 / .013	4.000 / .00	.00 / .00	0 / BOX	.0
.752	.0850													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10077.870	175.102	1.345	176.447	6.11	1.14	.02	176.47	.00	.42	4.00	6.000	4.000	.00	0 .0
.209	.0850					.0001	.00	1.35	.17	.16	.013	.00	.00	BOX
10078.080	175.120	1.327	176.447	6.11	1.15	.02	176.47	.00	.42	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10078.080	175.120	.077	175.197	6.11	19.74	6.05	181.25	.00	.42	4.00	6.000	4.000	.00	0 .0
.208	.0850					.9673	.20	.08	12.50	.16	.013	.00	.00	BOX
10078.280	175.137	.077	175.214	6.11	19.94	6.17	181.39	.00	.42	4.00	6.000	4.000	.00	0 .0
.625	.0850					1.0669	.67	.08	12.70	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.06688														
10078.910	175.191	.073	175.264	6.11	20.91	6.79	182.06	.00	.42	4.00	6.000	4.000	.00	0 .0
.581	.0850					1.2478	.73	.07	13.64	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.24776														
10079.490	175.240	.070	175.310	6.11	21.94	7.47	182.78	.00	.42	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10079.490	175.240	.324	175.563	6.11	21.80	7.38	182.94	.00	.95	1.23	1.500	.000	.00	1 .0
37.392	.3249					.3252	12.16	.32	8.06	.32	.013	.00	.00	PIPE
10116.880	187.390	.324	187.713	6.11	21.80	7.38	195.09	.00	.95	1.23	1.500	.000	.00	1 .0
33.007	.3249					.3194	10.54	.32	8.06	.32	.013	.00	.00	PIPE
10149.890	198.114	.326	198.441	6.11	21.53	7.20	205.64	.00	.95	1.24	1.500	.000	.00	1 .0
20.619	.3249					.2937	6.06	.33	7.92	.32	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10170.510	204.814	.337	205.151	6.11	20.52	6.54	211.69	.00	.95	1.25	1.500	.000	.00	1 .0
8.561	.3249					.2569	2.20	.34	7.42	.32	.013	.00	.00	PIPE
10179.070	207.596	.349	207.945	6.11	19.57	5.95	213.89	.00	.95	1.27	1.500	.000	.00	1 .0
5.274	.3249					.2247	1.19	.35	6.95	.32	.013	.00	.00	PIPE
10184.340	209.310	.361	209.671	6.11	18.66	5.41	215.08	.00	.95	1.28	1.500	.000	.00	1 .0
3.731	.3249					.1964	.73	.36	6.51	.32	.013	.00	.00	PIPE
10188.070	210.522	.373	210.895	6.11	17.79	4.91	215.81	.00	.95	1.30	1.500	.000	.00	1 .0
2.832	.3249					.1717	.49	.37	6.09	.32	.013	.00	.00	PIPE
10190.910	211.442	.386	211.828	6.11	16.96	4.47	216.30	.00	.95	1.31	1.500	.000	.00	1 .0
2.250	.3249					.1502	.34	.39	5.70	.32	.013	.00	.00	PIPE
10193.160	212.174	.399	212.573	6.11	16.17	4.06	216.63	.00	.95	1.33	1.500	.000	.00	1 .0
1.836	.3249					.1314	.24	.40	5.34	.32	.013	.00	.00	PIPE
10194.990	212.770	.413	213.183	6.11	15.42	3.69	216.88	.00	.95	1.34	1.500	.000	.00	1 .0
1.532	.3249					.1150	.18	.41	5.00	.32	.013	.00	.00	PIPE
10196.520	213.268	.427	213.695	6.11	14.70	3.36	217.05	.00	.95	1.35	1.500	.000	.00	1 .0
1.293	.3249					.1006	.13	.43	4.68	.32	.013	.00	.00	PIPE
10197.820	213.688	.442	214.130	6.11	14.02	3.05	217.18	.00	.95	1.37	1.500	.000	.00	1 .0
1.104	.3249					.0881	.10	.44	4.38	.32	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10198.920	214.047	.458	214.505	6.11	13.37	2.77	217.28	.00	.95	1.38	1.500	.000	.00	1 .0
.953	.3249					.0772	.07	.46	4.10	.32	.013	.00	.00	PIPE
10199.870	214.356	.474	214.830	6.11	12.74	2.52	217.35	.00	.95	1.39	1.500	.000	.00	1 .0
.828	.3249					.0675	.06	.47	3.83	.32	.013	.00	.00	PIPE
10200.700	214.626	.490	215.116	6.11	12.15	2.29	217.41	.00	.95	1.41	1.500	.000	.00	1 .0
.717	.3249					.0592	.04	.49	3.58	.32	.013	.00	.00	PIPE
10201.420	214.858	.508	215.367	6.11	11.59	2.08	217.45	.00	.95	1.42	1.500	.000	.00	1 .0
.628	.3249					.0519	.03	.51	3.35	.32	.013	.00	.00	PIPE
10202.050	215.063	.526	215.589	6.11	11.05	1.89	217.48	.00	.95	1.43	1.500	.000	.00	1 .0
.549	.3249					.0455	.02	.53	3.13	.32	.013	.00	.00	PIPE
10202.600	215.241	.545	215.786	6.11	10.53	1.72	217.51	.00	.95	1.44	1.500	.000	.00	1 .0
.482	.3249					.0399	.02	.55	2.93	.32	.013	.00	.00	PIPE
10203.080	215.398	.564	215.962	6.11	10.04	1.57	217.53	.00	.95	1.45	1.500	.000	.00	1 .0
.419	.3249					.0350	.01	.56	2.73	.32	.013	.00	.00	PIPE
10203.500	215.534	.585	216.119	6.11	9.57	1.42	217.54	.00	.95	1.46	1.500	.000	.00	1 .0
.368	.3249					.0307	.01	.59	2.56	.32	.013	.00	.00	PIPE
10203.870	215.653	.606	216.259	6.11	9.13	1.29	217.55	.00	.95	1.47	1.500	.000	.00	1 .0
.321	.3249					.0269	.01	.61	2.39	.32	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10204.190	215.758	.628	216.386	6.11	8.70	1.18	217.56	.00	.95	1.48	1.500	.000	.00	1 .0
.278	.3249					.0236	.01	.63	2.23	.32	.013	.00	.00	PIPE
10204.460	215.848	.651	216.499	6.11	8.30	1.07	217.57	.00	.95	1.49	1.500	.000	.00	1 .0
.241	.3249					.0208	.01	.65	2.08	.32	.013	.00	.00	PIPE
10204.710	215.926	.675	216.601	6.11	7.91	.97	217.57	.00	.95	1.49	1.500	.000	.00	1 .0
.207	.3249					.0183	.00	.68	1.94	.32	.013	.00	.00	PIPE
10204.910	215.993	.700	216.694	6.11	7.54	.88	217.58	.00	.95	1.50	1.500	.000	.00	1 .0
.173	.3249					.0161	.00	.70	1.81	.32	.013	.00	.00	PIPE
10205.090	216.050	.727	216.777	6.11	7.19	.80	217.58	.00	.95	1.50	1.500	.000	.00	1 .0
.148	.3249					.0141	.00	.73	1.68	.32	.013	.00	.00	PIPE
10205.230	216.098	.754	216.852	6.11	6.86	.73	217.58	.00	.95	1.50	1.500	.000	.00	1 .0
.120	.3249					.0124	.00	.75	1.57	.32	.013	.00	.00	PIPE
10205.350	216.137	.783	216.920	6.11	6.54	.66	217.58	.00	.95	1.50	1.500	.000	.00	1 .0
.094	.3249					.0110	.00	.78	1.46	.32	.013	.00	.00	PIPE
10205.450	216.167	.814	216.981	6.11	6.24	.60	217.58	.00	.95	1.49	1.500	.000	.00	1 .0
.072	.3249					.0097	.00	.81	1.36	.32	.013	.00	.00	PIPE
10205.520	216.191	.846	217.037	6.11	5.95	.55	217.59	.00	.95	1.49	1.500	.000	.00	1 .0
.050	.3249					.0086	.00	.85	1.26	.32	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10205.570	216.207	.880	217.087	6.11	5.67	.50	217.59	.00	.95	1.48	1.500	.000	.00	1 .0
.032	.3249					.0076	.00	.88	1.17	.32	.013	.00	.00	PIPE
10205.600	216.218	.915	217.133	6.11	5.40	.45	217.59	.00	.95	1.46	1.500	.000	.00	1 .0
.008	.3249					.0067	.00	.92	1.08	.32	.013	.00	.00	PIPE
10205.610	216.220	.955	217.175	6.11	5.15	.41	217.59	.00	.95	1.44	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10205.610	216.220	1.552	217.772	6.11	.98	.02	217.79	.00	.42	4.00	6.000	4.000	.00	0 .0
.833	.0850					.0001	.00	1.55	.14	.16	.013	.00	.00	BOX
10206.440	216.291	1.480	217.771	6.11	1.03	.02	217.79	.00	.42	4.00	6.000	4.000	.00	0 .0
.792	.0850					.0001	.00	1.48	.15	.16	.013	.00	.00	BOX
10207.240	216.358	1.411	217.769	6.11	1.08	.02	217.79	.00	.42	4.00	6.000	4.000	.00	0 .0
.752	.0850					.0001	.00	1.41	.16	.16	.013	.00	.00	BOX
10207.990	216.422	1.345	217.767	6.11	1.14	.02	217.79	.00	.42	4.00	6.000	4.000	.00	0 .0
.081	.0850					.0001	.00	1.35	.17	.16	.013	.00	.00	BOX
10208.070	216.429	1.345	217.774	6.11	1.14	.02	217.79	.00	.42	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10208.070	216.429	.076	216.505	6.11	20.03	6.23	222.74	.00	.42	4.00	6.000	4.000	.00	0 .0
.388	.0850					1.0403	.40	.08	12.78	.16	.013	.00	.00	BOX

WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.04034

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10208.460	216.462	.074	216.536	6.11	20.53	6.55	223.08	.00	.42	4.00	6.000	4.000	.00	0 .0
.598	.0850					1.1741	.70	.07	13.26	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.17409														
10209.050	216.513	.071	216.584	6.11	21.53	7.20	223.78	.00	.42	4.00	6.000	4.000	.00	0 .0
.557	.0850					1.3732	.76	.07	14.25	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.37324														
10209.610	216.560	.068	216.628	6.11	22.58	7.92	224.55	.00	.42	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10209.610	216.560	.316	216.876	6.11	22.58	7.92	224.79	.00	.95	1.22	1.500	.000	.00	1 .0
5.462	.4634					.3363	1.84	.32	8.46	.30	.013	.00	.00	PIPE
10215.070	219.091	.326	219.417	6.11	21.53	7.20	226.61	.00	.95	1.24	1.500	.000	.00	1 .0
3.790	.4634					.2937	1.11	.33	7.92	.30	.013	.00	.00	PIPE
10218.860	220.848	.337	221.185	6.11	20.52	6.54	227.73	.00	.95	1.25	1.500	.000	.00	1 .0
2.821	.4634					.2569	.72	.34	7.42	.30	.013	.00	.00	PIPE
10221.680	222.155	.349	222.504	6.11	19.57	5.95	228.45	.00	.95	1.27	1.500	.000	.00	1 .0
2.215	.4634					.2247	.50	.35	6.95	.30	.013	.00	.00	PIPE
10223.900	223.181	.361	223.542	6.11	18.66	5.41	228.95	.00	.95	1.28	1.500	.000	.00	1 .0
1.796	.4634					.1964	.35	.36	6.51	.30	.013	.00	.00	PIPE
10225.700	224.013	.373	224.387	6.11	17.79	4.91	229.30	.00	.95	1.30	1.500	.000	.00	1 .0
1.487	.4634					.1717	.26	.37	6.09	.30	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10227.180	224.703	.386	225.089	6.11	16.96	4.47	229.56	.00	.95	1.31	1.500	.000	.00	1 .0
1.255	.4634					.1502	.19	.39	5.70	.30	.013	.00	.00	PIPE
10228.440	225.284	.399	225.683	6.11	16.17	4.06	229.74	.00	.95	1.33	1.500	.000	.00	1 .0
1.070	.4634					.1314	.14	.40	5.34	.30	.013	.00	.00	PIPE
10229.510	225.780	.413	226.193	6.11	15.42	3.69	229.89	.00	.95	1.34	1.500	.000	.00	1 .0
.923	.4634					.1150	.11	.41	5.00	.30	.013	.00	.00	PIPE
10230.430	226.208	.427	226.635	6.11	14.70	3.36	229.99	.00	.95	1.35	1.500	.000	.00	1 .0
.800	.4634					.1006	.08	.43	4.68	.30	.013	.00	.00	PIPE
10231.230	226.579	.442	227.021	6.11	14.02	3.05	230.07	.00	.95	1.37	1.500	.000	.00	1 .0
.696	.4634					.0881	.06	.44	4.38	.30	.013	.00	.00	PIPE
10231.930	226.901	.458	227.359	6.11	13.37	2.77	230.13	.00	.95	1.38	1.500	.000	.00	1 .0
.611	.4634					.0772	.05	.46	4.10	.30	.013	.00	.00	PIPE
10232.540	227.185	.474	227.659	6.11	12.74	2.52	230.18	.00	.95	1.39	1.500	.000	.00	1 .0
.539	.4634					.0675	.04	.47	3.83	.30	.013	.00	.00	PIPE
10233.080	227.434	.490	227.924	6.11	12.15	2.29	230.22	.00	.95	1.41	1.500	.000	.00	1 .0
.471	.4634					.0592	.03	.49	3.58	.30	.013	.00	.00	PIPE
10233.550	227.653	.508	228.161	6.11	11.59	2.08	230.24	.00	.95	1.42	1.500	.000	.00	1 .0
.417	.4634					.0519	.02	.51	3.35	.30	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10233.960	227.846	.526	228.372	6.11	11.05	1.89	230.27	.00	.95	1.43	1.500	.000	.00	1 .0
.366	.4634					.0455	.02	.53	3.13	.30	.013	.00	.00	PIPE
10234.330	228.016	.545	228.561	6.11	10.53	1.72	230.28	.00	.95	1.44	1.500	.000	.00	1 .0
.325	.4634					.0399	.01	.55	2.93	.30	.013	.00	.00	PIPE
10234.660	228.166	.564	228.730	6.11	10.04	1.57	230.30	.00	.95	1.45	1.500	.000	.00	1 .0
.283	.4634					.0350	.01	.56	2.73	.30	.013	.00	.00	PIPE
10234.940	228.297	.585	228.883	6.11	9.57	1.42	230.31	.00	.95	1.46	1.500	.000	.00	1 .0
.251	.4634					.0307	.01	.59	2.56	.30	.013	.00	.00	PIPE
10235.190	228.414	.606	229.020	6.11	9.13	1.29	230.31	.00	.95	1.47	1.500	.000	.00	1 .0
.219	.4634					.0269	.01	.61	2.39	.30	.013	.00	.00	PIPE
10235.410	228.515	.628	229.143	6.11	8.70	1.18	230.32	.00	.95	1.48	1.500	.000	.00	1 .0
.190	.4634					.0236	.00	.63	2.23	.30	.013	.00	.00	PIPE
10235.600	228.604	.651	229.255	6.11	8.30	1.07	230.32	.00	.95	1.49	1.500	.000	.00	1 .0
.165	.4634					.0208	.00	.65	2.08	.30	.013	.00	.00	PIPE
10235.760	228.680	.675	229.355	6.11	7.91	.97	230.33	.00	.95	1.49	1.500	.000	.00	1 .0
.143	.4634					.0183	.00	.68	1.94	.30	.013	.00	.00	PIPE
10235.910	228.746	.700	229.446	6.11	7.54	.88	230.33	.00	.95	1.50	1.500	.000	.00	1 .0
.119	.4634					.0161	.00	.70	1.81	.30	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10236.030	228.801	.727	229.529	6.11	7.19	.80	230.33	.00	.95	1.50	1.500	.000	.00	1 .0
.103	.4634					.0141	.00	.73	1.68	.30	.013	.00	.00	PIPE
10236.130	228.849	.754	229.603	6.11	6.86	.73	230.33	.00	.95	1.50	1.500	.000	.00	1 .0
.083	.4634					.0124	.00	.75	1.57	.30	.013	.00	.00	PIPE
10236.210	228.887	.783	229.670	6.11	6.54	.66	230.33	.00	.95	1.50	1.500	.000	.00	1 .0
.064	.4634					.0110	.00	.78	1.46	.30	.013	.00	.00	PIPE
10236.280	228.917	.814	229.732	6.11	6.24	.60	230.34	.00	.95	1.49	1.500	.000	.00	1 .0
.051	.4634					.0097	.00	.81	1.36	.30	.013	.00	.00	PIPE
10236.330	228.941	.846	229.787	6.11	5.95	.55	230.34	.00	.95	1.49	1.500	.000	.00	1 .0
.035	.4634					.0086	.00	.85	1.26	.30	.013	.00	.00	PIPE
10236.360	228.957	.880	229.837	6.11	5.67	.50	230.34	.00	.95	1.48	1.500	.000	.00	1 .0
.022	.4634					.0076	.00	.88	1.17	.30	.013	.00	.00	PIPE
10236.380	228.968	.915	229.883	6.11	5.40	.45	230.34	.00	.95	1.46	1.500	.000	.00	1 .0
.005	.4634					.0067	.00	.92	1.08	.30	.013	.00	.00	PIPE
10236.390	228.970	.955	229.925	6.11	5.15	.41	230.34	.00	.95	1.44	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10236.390	228.970	1.552	230.522	6.11	.98	.02	230.54	.00	.42	4.00	6.000	4.000	.00	0 .0
.858	.0825					.0001	.00	1.55	.14	.16	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10237.250	229.041	1.480	230.521	6.11	1.03	.02	230.54	.00	.42	4.00	6.000	4.000	.00	0 .0
.337	.0825					.0001	.00	1.48	.15	.16	.013	.00	.00	BOX
10237.580	229.069	1.446	230.515	6.11	1.06	.02	230.53	.00	.42	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10237.580	229.069	.067	229.135	6.11	22.97	8.19	237.33	.00	.42	4.00	6.000	4.000	.00	0 .0
.395	.0825					1.6985	.67	.07	15.70	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.69851														
10237.980	229.101	.063	229.164	6.11	24.09	9.01	238.18	.00	.42	4.00	6.000	4.000	.00	0 .0
.472	.0825					1.9871	.94	.06	16.86	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.98706														
10238.450	229.140	.060	229.200	6.11	25.27	9.91	239.11	.00	.42	4.00	6.000	4.000	.00	0 .0
.440	.0825					2.3248	1.02	.06	18.11	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.32482														
10238.890	229.176	.058	229.234	6.11	26.50	10.90	240.14	.00	.42	4.00	6.000	4.000	.00	0 .0
.412	.0825					2.7202	1.12	.06	19.45	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.72023														
10239.300	229.210	.055	229.265	6.11	27.79	12.00	241.26	.00	.42	4.00	6.000	4.000	.00	0 .0
.386	.0825					3.1831	1.23	.05	20.89	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 3.18315														
10239.690	229.242	.052	229.295	6.11	29.15	13.19	242.49	.00	.42	4.00	6.000	4.000	.00	0 .0
.361	.0825					3.7251	1.35	.05	22.44	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 3.72512														
10240.050	229.272	.050	229.322	6.11	30.57	14.51	243.84	.00	.42	4.00	6.000	4.000	.00	0 .0
.339	.0825					4.3597	1.48	.05	24.10	.16	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 4.35970														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10240.390	229.300	.048	229.348	6.11	32.07	15.97	245.31	.00	.42	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10240.390	229.300	.246	229.546	6.11	32.29	16.19	245.74	.00	.95	1.11	1.500	.000	.00	1 .0
2.496	1.2650					.9570	2.39	.25	13.79	.23	.013	.00	.00	PIPE
10242.890	232.457	.250	232.707	6.11	31.52	15.42	248.13	.00	.95	1.12	1.500	.000	.00	1 .0
3.485	1.2650					.8649	3.01	.25	13.34	.23	.013	.00	.00	PIPE
10246.370	236.866	.258	237.124	6.11	30.05	14.02	251.15	.00	.95	1.13	1.500	.000	.00	1 .0
2.483	1.2650					.7553	1.88	.26	12.50	.23	.013	.00	.00	PIPE
10248.860	240.007	.267	240.274	6.11	28.65	12.75	253.02	.00	.95	1.15	1.500	.000	.00	1 .0
1.900	1.2650					.6600	1.25	.27	11.71	.23	.013	.00	.00	PIPE
10250.760	242.411	.276	242.688	6.11	27.32	11.59	254.28	.00	.95	1.16	1.500	.000	.00	1 .0
1.517	1.2650					.5764	.87	.28	10.98	.23	.013	.00	.00	PIPE
10252.270	244.330	.285	244.615	6.11	26.05	10.53	255.15	.00	.95	1.18	1.500	.000	.00	1 .0
1.244	1.2650					.5035	.63	.29	10.28	.23	.013	.00	.00	PIPE
10253.520	245.905	.295	246.200	6.11	24.83	9.58	255.78	.00	.95	1.19	1.500	.000	.00	1 .0
1.043	1.2650					.4402	.46	.30	9.64	.23	.013	.00	.00	PIPE
10254.560	247.225	.305	247.530	6.11	23.68	8.71	256.24	.00	.95	1.21	1.500	.000	.00	1 .0
.888	1.2650					.3845	.34	.31	9.03	.23	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10255.450	248.347	.315	248.662	6.11	22.58	7.91	256.58	.00	.95	1.22	1.500	.000	.00	1 .0
.763	1.2650					.3360	.26	.32	8.45	.23	.013	.00	.00	PIPE
10256.210	249.312	.326	249.638	6.11	21.53	7.20	256.83	.00	.95	1.24	1.500	.000	.00	1 .0
.662	1.2650					.2937	.19	.33	7.92	.23	.013	.00	.00	PIPE
10256.870	250.150	.337	250.487	6.11	20.52	6.54	257.03	.00	.95	1.25	1.500	.000	.00	1 .0
.578	1.2650					.2569	.15	.34	7.42	.23	.013	.00	.00	PIPE
10257.450	250.881	.349	251.230	6.11	19.57	5.95	257.18	.00	.95	1.27	1.500	.000	.00	1 .0
.508	1.2650					.2247	.11	.35	6.95	.23	.013	.00	.00	PIPE
10257.960	251.524	.361	251.885	6.11	18.66	5.41	257.29	.00	.95	1.28	1.500	.000	.00	1 .0
.448	1.2650					.1964	.09	.36	6.51	.23	.013	.00	.00	PIPE
10258.410	252.091	.373	252.464	6.11	17.79	4.91	257.38	.00	.95	1.30	1.500	.000	.00	1 .0
.396	1.2650					.1717	.07	.37	6.09	.23	.013	.00	.00	PIPE
10258.800	252.593	.386	252.979	6.11	16.96	4.47	257.45	.00	.95	1.31	1.500	.000	.00	1 .0
.353	1.2650					.1502	.05	.39	5.70	.23	.013	.00	.00	PIPE
10259.160	253.039	.399	253.438	6.11	16.17	4.06	257.50	.00	.95	1.33	1.500	.000	.00	1 .0
.313	1.2650					.1314	.04	.40	5.34	.23	.013	.00	.00	PIPE
10259.470	253.436	.413	253.849	6.11	15.42	3.69	257.54	.00	.95	1.34	1.500	.000	.00	1 .0
.279	1.2650					.1150	.03	.41	5.00	.23	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10259.750	253.789	.427	254.217	6.11	14.70	3.36	257.57	.00	.95	1.35	1.500	.000	.00	1 .0
.249	1.2650					.1006	.03	.43	4.68	.23	.013	.00	.00	PIPE
10260.000	254.105	.442	254.547	6.11	14.02	3.05	257.60	.00	.95	1.37	1.500	.000	.00	1 .0
.222	1.2650					.0881	.02	.44	4.38	.23	.013	.00	.00	PIPE
10260.220	254.386	.458	254.844	6.11	13.37	2.77	257.62	.00	.95	1.38	1.500	.000	.00	1 .0
.199	1.2650					.0772	.02	.46	4.10	.23	.013	.00	.00	PIPE
10260.420	254.637	.474	255.111	6.11	12.74	2.52	257.63	.00	.95	1.39	1.500	.000	.00	1 .0
.178	1.2650					.0675	.01	.47	3.83	.23	.013	.00	.00	PIPE
10260.600	254.863	.490	255.353	6.11	12.15	2.29	257.65	.00	.95	1.41	1.500	.000	.00	1 .0
.158	1.2650					.0592	.01	.49	3.58	.23	.013	.00	.00	PIPE
10260.750	255.062	.508	255.570	6.11	11.59	2.08	257.65	.00	.95	1.42	1.500	.000	.00	1 .0
.142	1.2650					.0519	.01	.51	3.35	.23	.013	.00	.00	PIPE
10260.900	255.241	.526	255.767	6.11	11.05	1.89	257.66	.00	.95	1.43	1.500	.000	.00	1 .0
.126	1.2650					.0455	.01	.53	3.13	.23	.013	.00	.00	PIPE
10261.020	255.400	.545	255.945	6.11	10.53	1.72	257.67	.00	.95	1.44	1.500	.000	.00	1 .0
.112	1.2650					.0399	.00	.55	2.93	.23	.013	.00	.00	PIPE
10261.130	255.542	.564	256.106	6.11	10.04	1.57	257.67	.00	.95	1.45	1.500	.000	.00	1 .0
.099	1.2650					.0350	.00	.56	2.73	.23	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10261.230	255.667	.585	256.252	6.11	9.57	1.42	257.68	.00	.95	1.46	1.500	.000	.00	1 .0
.088	1.2650					.0307	.00	.59	2.56	.23	.013	.00	.00	PIPE
10261.320	255.778	.606	256.384	6.11	9.13	1.29	257.68	.00	.95	1.47	1.500	.000	.00	1 .0
.077	1.2650					.0269	.00	.61	2.39	.23	.013	.00	.00	PIPE
10261.400	255.876	.628	256.504	6.11	8.70	1.18	257.68	.00	.95	1.48	1.500	.000	.00	1 .0
.067	1.2650					.0236	.00	.63	2.23	.23	.013	.00	.00	PIPE
10261.470	255.961	.651	256.612	6.11	8.30	1.07	257.68	.00	.95	1.49	1.500	.000	.00	1 .0
.059	1.2650					.0208	.00	.65	2.08	.23	.013	.00	.00	PIPE
10261.520	256.036	.675	256.711	6.11	7.91	.97	257.68	.00	.95	1.49	1.500	.000	.00	1 .0
.051	1.2650					.0183	.00	.68	1.94	.23	.013	.00	.00	PIPE
10261.580	256.100	.700	256.800	6.11	7.54	.88	257.68	.00	.95	1.50	1.500	.000	.00	1 .0
.043	1.2650					.0161	.00	.70	1.81	.23	.013	.00	.00	PIPE
10261.620	256.154	.727	256.881	6.11	7.19	.80	257.68	.00	.95	1.50	1.500	.000	.00	1 .0
.037	1.2650					.0141	.00	.73	1.68	.23	.013	.00	.00	PIPE
10261.660	256.201	.754	256.955	6.11	6.86	.73	257.69	.00	.95	1.50	1.500	.000	.00	1 .0
.030	1.2650					.0124	.00	.75	1.57	.23	.013	.00	.00	PIPE
10261.690	256.238	.783	257.022	6.11	6.54	.66	257.69	.00	.95	1.50	1.500	.000	.00	1 .0
.023	1.2650					.0110	.00	.78	1.46	.23	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10261.710	256.268	.814	257.082	6.11	6.24	.60	257.69	.00	.95	1.49	1.500	.000	.00	1 .0
.019	1.2650					.0097	.00	.81	1.36	.23	.013	.00	.00	PIPE
10261.730	256.291	.846	257.137	6.11	5.95	.55	257.69	.00	.95	1.49	1.500	.000	.00	1 .0
.013	1.2650					.0086	.00	.85	1.26	.23	.013	.00	.00	PIPE
10261.740	256.307	.880	257.187	6.11	5.67	.50	257.69	.00	.95	1.48	1.500	.000	.00	1 .0
.008	1.2650					.0076	.00	.88	1.17	.23	.013	.00	.00	PIPE
10261.750	256.318	.915	257.233	6.11	5.40	.45	257.69	.00	.95	1.46	1.500	.000	.00	1 .0
.002	1.2650					.0067	.00	.92	1.08	.23	.013	.00	.00	PIPE
10261.750	256.320	.955	257.275	6.11	5.15	.41	257.69	.00	.95	1.44	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10261.750	256.320	1.552	257.872	6.11	.98	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
.858	.0825					.0001	.00	1.55	.14	.16	.013	.00	.00	BOX
10262.610	256.391	1.480	257.871	6.11	1.03	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
.815	.0825					.0001	.00	1.48	.15	.16	.013	.00	.00	BOX
10263.420	256.458	1.411	257.869	6.11	1.08	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
.775	.0825					.0001	.00	1.41	.16	.16	.013	.00	.00	BOX
10264.200	256.522	1.345	257.867	6.11	1.14	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
.735	.0825					.0001	.00	1.35	.17	.16	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10264.930	256.583	1.283	257.865	6.11	1.19	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
.698	.0825					.0002	.00	1.28	.19	.16	.013	.00	.00	BOX
10265.630	256.640	1.223	257.863	6.11	1.25	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
.117	.0825					.0002	.00	1.22	.20	.16	.013	.00	.00	BOX
10265.750	256.650	1.213	257.863	6.11	1.26	.02	257.89	.00	.42	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10265.750	256.650	.696	257.346	6.11	7.62	.90	258.25	.00	.95	1.50	1.500	.000	.00	1 .0
3.712	.0201					.0173	.06	.70	1.83	.67	.013	.00	.00	PIPE
10269.460	256.725	.700	257.425	6.11	7.54	.88	258.31	.00	.95	1.50	1.500	.000	.00	1 .0
13.198	.0201					.0161	.21	.70	1.81	.67	.013	.00	.00	PIPE
10282.660	256.990	.727	257.717	6.11	7.19	.80	258.52	.00	.95	1.50	1.500	.000	.00	1 .0
7.718	.0201					.0141	.11	.73	1.68	.67	.013	.00	.00	PIPE
10290.380	257.145	.754	257.899	6.11	6.86	.73	258.63	.00	.95	1.50	1.500	.000	.00	1 .0
4.886	.0201					.0124	.06	.75	1.57	.67	.013	.00	.00	PIPE
10295.260	257.243	.783	258.026	6.11	6.54	.66	258.69	.00	.95	1.50	1.500	.000	.00	1 .0
3.218	.0201					.0110	.04	.78	1.46	.67	.013	.00	.00	PIPE
10298.480	257.308	.814	258.122	6.11	6.24	.60	258.73	.00	.95	1.49	1.500	.000	.00	1 .0
2.196	.0201					.0097	.02	.81	1.36	.67	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10300.680	257.352	.846	258.198	6.11	5.95	.55	258.75	.00	.95	1.49	1.500	.000	.00	1 .0
1.376	.0201				.0086	.01	.85	1.26	.67	.013	.00	.00		PIPE
10302.050	257.380	.880	258.260	6.11	5.67	.50	258.76	.00	.95	1.48	1.500	.000	.00	1 .0
.826	.0201				.0076	.01	.88	1.17	.67	.013	.00	.00		PIPE
10302.880	257.396	.915	258.311	6.11	5.40	.45	258.77	.00	.95	1.46	1.500	.000	.00	1 .0
.179	.0201				.0067	.00	.92	1.08	.67	.013	.00	.00		PIPE
10303.060	257.400	.955	258.355	6.11	5.15	.41	258.77	.00	.95	1.44	1.500	.000	.00	1 .0
WALL ENTRANCE														
10303.060	257.400	1.552	258.952	6.11	.98	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
.858	.0825				.0001	.00	1.55	.14	.16	.013	.00	.00		BOX
10303.920	257.471	1.480	258.951	6.11	1.03	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
.815	.0825				.0001	.00	1.48	.15	.16	.013	.00	.00		BOX
10304.730	257.538	1.411	258.949	6.11	1.08	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
.775	.0825				.0001	.00	1.41	.16	.16	.013	.00	.00		BOX
10305.510	257.602	1.345	258.947	6.11	1.14	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
.735	.0825				.0001	.00	1.35	.17	.16	.013	.00	.00		BOX
10306.240	257.663	1.283	258.945	6.11	1.19	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
.698	.0825				.0002	.00	1.28	.19	.16	.013	.00	.00		BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10306.940	257.720	1.223	258.943	6.11	1.25	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
.117	.0825					.0002	.00	1.22	.20	.16	.013	.00	.00	BOX
10307.060	257.730	1.213	258.943	6.11	1.26	.02	258.97	.00	.42	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10307.060	257.730	.689	258.419	6.11	7.71	.92	259.34	.00	.95	1.50	1.500	.000	.00	1 .0
11.449	.0199					.0176	.20	.69	1.87	.67	.013	.00	.00	PIPE
10318.510	257.958	.700	258.658	6.11	7.54	.88	259.54	.00	.95	1.50	1.500	.000	.00	1 .0
13.831	.0199					.0161	.22	.70	1.81	.67	.013	.00	.00	PIPE
10332.340	258.234	.727	258.961	6.11	7.19	.80	259.76	.00	.95	1.50	1.500	.000	.00	1 .0
7.965	.0199					.0141	.11	.73	1.68	.67	.013	.00	.00	PIPE
10340.300	258.392	.754	259.146	6.11	6.86	.73	259.88	.00	.95	1.50	1.500	.000	.00	1 .0
5.007	.0199					.0124	.06	.75	1.57	.67	.013	.00	.00	PIPE
10345.310	258.492	.783	259.275	6.11	6.54	.66	259.94	.00	.95	1.50	1.500	.000	.00	1 .0
3.284	.0199					.0110	.04	.78	1.46	.67	.013	.00	.00	PIPE
10348.590	258.557	.814	259.371	6.11	6.24	.60	259.98	.00	.95	1.49	1.500	.000	.00	1 .0
2.236	.0199					.0097	.02	.81	1.36	.67	.013	.00	.00	PIPE
10350.830	258.602	.846	259.448	6.11	5.95	.55	260.00	.00	.95	1.49	1.500	.000	.00	1 .0
1.398	.0199					.0086	.01	.85	1.26	.67	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:29

MAPLE CANYON
SYSTEM 10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10352.230	258.630	.880	259.510	6.11	5.67 / .50 /	260.01	.00 /	.95 /	1.48	1.500	.000	.00	1 .0
.839	.0199				.0076	.01	.88	1.17	.67	.013	.00	.00	PIPE
10353.070	258.646	.915	259.561	6.11	5.40 / .45 /	260.02	.00 /	.95 /	1.46	1.500	.000	.00	1 .0
.182	.0199				.0067	.00	.92	1.08	.67	.013	.00	.00	PIPE
10353.250	258.650	.955	259.605	6.11	5.15 / .41 /	260.02	.00 /	.95 /	1.44	1.500	.000	.00	1 .0
JUNCT STR	.0850				.0033	.01	.95	1.00		.013	.00	.00	PIPE
10357.250	258.990	1.276	260.266	1.92	1.20 / .02 /	260.29	.00 /	.52 /	1.07	1.500	.000	.00	1 .0
3.272	.0198				.0003	.00	1.28	.17	.37	.013	.00	.00	PIPE
10360.520	259.055	1.210	260.265	1.92	1.26 / .02 /	260.29	.00 /	.52 /	1.18	1.500	.000	.00	1 .0
2.858	.0198				.0004	.00	1.21	.20	.37	.013	.00	.00	PIPE
10363.380	259.111	1.152	260.263	1.92	1.32 / .03 /	260.29	.00 /	.52 /	1.27	1.500	.000	.00	1 .0
2.594	.0198				.0004	.00	1.15	.22	.37	.013	.00	.00	PIPE
10365.970	259.163	1.099	260.262	1.92	1.38 / .03 /	260.29	.00 /	.52 /	1.33	1.500	.000	.00	1 .0
2.327	.0198				.0004	.00	1.10	.24	.37	.013	.00	.00	PIPE
10368.300	259.209	1.051	260.260	1.92	1.45 / .03 /	260.29	.00 /	.52 /	1.37	1.500	.000	.00	1 .0
2.111	.0198				.0005	.00	1.05	.26	.37	.013	.00	.00	PIPE
10370.410	259.251	1.007	260.258	1.92	1.52 / .04 /	260.29	.00 /	.52 /	1.41	1.500	.000	.00	1 .0
1.945	.0198				.0006	.00	1.01	.28	.37	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10372.360	259.289	.966	260.255	1.92	1.60 / .04 /	260.29	.00 /	.52 /	1.44 /	1.500 /	.000 /	.00 /	1 .0
1.829	.0198				/ .0006	.00	/ .97	.31 /	.37 /	.013 /	.00 /	.00 /	PIPE
10374.190	259.325	.927	260.252	1.92	1.67 / .04 /	260.30	.00 /	.52 /	1.46 /	1.500 /	.000 /	.00 /	1 .0
.742	.0198				/ .0007	.00	/ .93	.33 /	.37 /	.013 /	.00 /	.00 /	PIPE
10374.930	259.340	.911	260.251	1.92	1.71 / .05 /	260.30	.00 /	.52 /	1.46 /	1.500 /	.000 /	.00 /	1 .0

System 10

Q =	6.11	cfs
V =	9.99	ft/sec
D =	0.567	ft
A =	0.611612	ft²
Ye =	0.552997	ft
g =	32.2	ft/sec²
Fr =	2.367424	
From Figure 7-2		
Ho =	2.116691	
HLoss/Ho	0.48	
HLoss =	1.016012	
Remaining Energy	1.100679	
Area Above Sill		
Height	0.3	ft
Width	8.5	ft
Area Above Sill	2.55	in
Depth of Sill	0.916667	ft
Total Depth =	1.216667	ft
Velocity	2.396078	ft/sec
TH	1.305816	OK

Figure 7-2

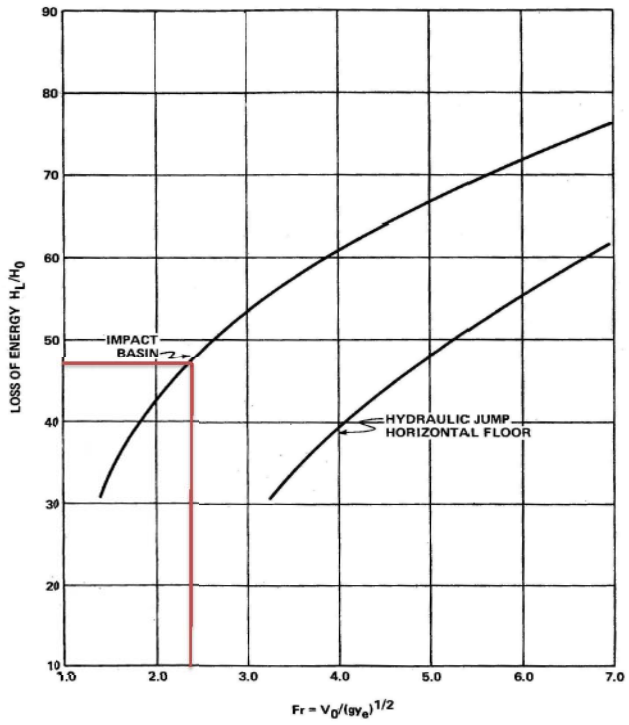


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 11
(2ND & OLIVE)

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Worksheet for 11 Existing

Project Description

Solve For	Spread

Input Data

Discharge		2.80	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		4.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	16.04	ft
Depth	4.99	in
Gutter Depression	1.14	in
Total Depression	5.14	in

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Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:47

MAPLE CANYON
SYSTEM 11

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10048.420	160.840	1.500	162.340	2.80	1.58	.04	162.38	.00	.64	.00	1.500	.000	.00	1 .0
.000	.0125				.0007	.00	1.50	.00	.50	.013	.00	.00		PIPE
10048.420	160.840	1.500	162.340	2.80	1.58	.04	162.38	.00	.64	.00	1.500	.000	.00	1 .0
2.390	.0125				.0007	.00	1.50	.00	.50	.013	.00	.00		PIPE
10050.810	160.870	1.461	162.331	2.80	1.60	.04	162.37	.00	.64	.48	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
10050.810	160.870	.228	161.098	2.80	16.48	4.22	165.32	.00	.64	1.08	1.500	.000	.00	1 .0
.820	.0125				.2825	.23	.23	7.31	.50	.013	.00	.00		PIPE
10051.630	160.880	.228	161.108	2.80	16.48	4.22	165.33	.00	.64	1.08	1.500	.000	.00	1 .0
30.252	.2823				.2825	8.55	.23	7.31	.23	.013	.00	.00		PIPE
10081.880	169.420	.228	169.648	2.80	16.48	4.22	173.87	.00	.64	1.08	1.500	.000	.00	1 .0
22.060	.2823				.2819	6.22	.23	7.31	.23	.013	.00	.00		PIPE
10103.940	175.647	.228	175.875	2.80	16.46	4.21	180.08	.00	.64	1.08	1.500	.000	.00	1 .0
20.030	.2823				.2636	5.28	.23	7.30	.23	.013	.00	.00		PIPE
10123.970	181.301	.236	181.537	2.80	15.70	3.83	185.36	.00	.64	1.09	1.500	.000	.00	1 .0
6.540	.2823				.2303	1.51	.24	6.85	.23	.013	.00	.00		PIPE
10130.510	183.147	.244	183.391	2.80	14.97	3.48	186.87	.00	.64	1.11	1.500	.000	.00	1 .0
3.797	.2823				.2011	.76	.24	6.42	.23	.013	.00	.00		PIPE

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MAPLE CANYON
SYSTEM 11

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10134.310	184.219	.252	184.471	2.80	14.27	3.16	187.63	.00	.64	1.12	1.500	.000	.00	1 .0
2.617	.2823					.1755	.46	.25	6.01	.23	.013	.00	.00	PIPE
10136.930	184.958	.260	185.218	2.80	13.61	2.87	188.09	.00	.64	1.14	1.500	.000	.00	1 .0
1.955	.2823					.1532	.30	.26	5.63	.23	.013	.00	.00	PIPE
10138.880	185.510	.269	185.779	2.80	12.97	2.61	188.39	.00	.64	1.15	1.500	.000	.00	1 .0
1.540	.2823					.1339	.21	.27	5.28	.23	.013	.00	.00	PIPE
10140.420	185.944	.278	186.222	2.80	12.37	2.38	188.60	.00	.64	1.17	1.500	.000	.00	1 .0
1.246	.2823					.1170	.15	.28	4.95	.23	.013	.00	.00	PIPE
10141.670	186.296	.288	186.584	2.80	11.79	2.16	188.74	.00	.64	1.18	1.500	.000	.00	1 .0
1.040	.2823					.1022	.11	.29	4.64	.23	.013	.00	.00	PIPE
10142.710	186.590	.297	186.887	2.80	11.24	1.96	188.85	.00	.64	1.20	1.500	.000	.00	1 .0
.873	.2823					.0892	.08	.30	4.34	.23	.013	.00	.00	PIPE
10143.580	186.836	.307	187.143	2.80	10.72	1.78	188.93	.00	.64	1.21	1.500	.000	.00	1 .0
.740	.2823					.0780	.06	.31	4.07	.23	.013	.00	.00	PIPE
10144.320	187.045	.318	187.363	2.80	10.22	1.62	188.99	.00	.64	1.23	1.500	.000	.00	1 .0
.638	.2823					.0682	.04	.32	3.81	.23	.013	.00	.00	PIPE
10144.960	187.225	.329	187.554	2.80	9.75	1.48	189.03	.00	.64	1.24	1.500	.000	.00	1 .0
.553	.2823					.0597	.03	.33	3.57	.23	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:47

MAPLE CANYON
SYSTEM 11

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10145.510	187.381	.340	187.721	2.80	9.29	1.34	189.06	.00	.64	1.26	1.500	.000	.00	1 .0
.478	.2823					.0522	.02	.34	3.34	.23	.013	.00	.00	PIPE
10145.990	187.516	.352	187.868	2.80	8.86	1.22	189.09	.00	.64	1.27	1.500	.000	.00	1 .0
.418	.2823					.0456	.02	.35	3.13	.23	.013	.00	.00	PIPE
10146.410	187.634	.364	187.998	2.80	8.45	1.11	189.11	.00	.64	1.29	1.500	.000	.00	1 .0
.366	.2823					.0399	.01	.36	2.93	.23	.013	.00	.00	PIPE
10146.770	187.737	.376	188.114	2.80	8.06	1.01	189.12	.00	.64	1.30	1.500	.000	.00	1 .0
.317	.2823					.0349	.01	.38	2.75	.23	.013	.00	.00	PIPE
10147.090	187.827	.389	188.216	2.80	7.68	.92	189.13	.00	.64	1.31	1.500	.000	.00	1 .0
.275	.2823					.0305	.01	.39	2.57	.23	.013	.00	.00	PIPE
10147.370	187.905	.403	188.308	2.80	7.32	.83	189.14	.00	.64	1.33	1.500	.000	.00	1 .0
.241	.2823					.0267	.01	.40	2.41	.23	.013	.00	.00	PIPE
10147.610	187.973	.417	188.390	2.80	6.98	.76	189.15	.00	.64	1.34	1.500	.000	.00	1 .0
.212	.2823					.0234	.00	.42	2.25	.23	.013	.00	.00	PIPE
10147.820	188.033	.431	188.464	2.80	6.66	.69	189.15	.00	.64	1.36	1.500	.000	.00	1 .0
.182	.2823					.0204	.00	.43	2.11	.23	.013	.00	.00	PIPE
10148.000	188.084	.446	188.530	2.80	6.35	.63	189.16	.00	.64	1.37	1.500	.000	.00	1 .0
.154	.2823					.0179	.00	.45	1.97	.23	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:47

MAPLE CANYON
SYSTEM 11

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10148.160	188.128	.462	188.590	2.80	6.05	.57	189.16	.00	.64	1.39	1.500	.000	.00	1 .0
.134	.2823					.0157	.00	.46	1.85	.23	.013	.00	.00	PIPE
10148.290	188.165	.478	188.644	2.80	5.77	.52	189.16	.00	.64	1.40	1.500	.000	.00	1 .0
.111	.2823					.0137	.00	.48	1.73	.23	.013	.00	.00	PIPE
10148.400	188.197	.495	188.692	2.80	5.50	.47	189.16	.00	.64	1.41	1.500	.000	.00	1 .0
.095	.2823					.0120	.00	.50	1.61	.23	.013	.00	.00	PIPE
10148.500	188.224	.512	188.736	2.80	5.25	.43	189.16	.00	.64	1.42	1.500	.000	.00	1 .0
.073	.2823					.0105	.00	.51	1.51	.23	.013	.00	.00	PIPE
10148.570	188.244	.531	188.776	2.80	5.00	.39	189.16	.00	.64	1.43	1.500	.000	.00	1 .0
.063	.2823					.0092	.00	.53	1.41	.23	.013	.00	.00	PIPE
10148.630	188.262	.549	188.811	2.80	4.77	.35	189.16	.00	.64	1.45	1.500	.000	.00	1 .0
.044	.2823					.0081	.00	.55	1.32	.23	.013	.00	.00	PIPE
10148.680	188.275	.569	188.844	2.80	4.55	.32	189.16	.00	.64	1.46	1.500	.000	.00	1 .0
.029	.2823					.0071	.00	.57	1.23	.23	.013	.00	.00	PIPE
10148.710	188.283	.590	188.873	2.80	4.34	.29	189.17	.00	.64	1.47	1.500	.000	.00	1 .0
.021	.2823					.0062	.00	.59	1.15	.23	.013	.00	.00	PIPE
10148.730	188.289	.611	188.900	2.80	4.13	.27	189.17	.00	.64	1.47	1.500	.000	.00	1 .0
.004	.2823					.0055	.00	.61	1.07	.23	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 0:47

MAPLE CANYON
SYSTEM 11

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10148.730	188.290	.635	188.925	2.80	3.93	.24	189.17	.00	.64	1.48	1.500	.000	.00	1 .0

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System 11

Q =	2.8	cfs
V =	1.58	ft/sec
D =	1.5	ft
A =	1.772152	ft²
Ye =	0.941316	ft
g =	32.2	ft/sec²
Fr =	0.286986	
From Figure 7-2		
Ho =	1.538764	
HLoss/Ho	0.1	
HLoss =	0.153876	
Remaining Energy	1.384888	
Area Above Sill		
Height	0.5	ft
Width	8.5	ft
Area Above Sill	4.25	in
Depth of Sill	0.916667	ft
Total Depth =	1.416667	ft
Velocity	0.658824	ft/sec
TH	1.423407	OK

Figure 7-2

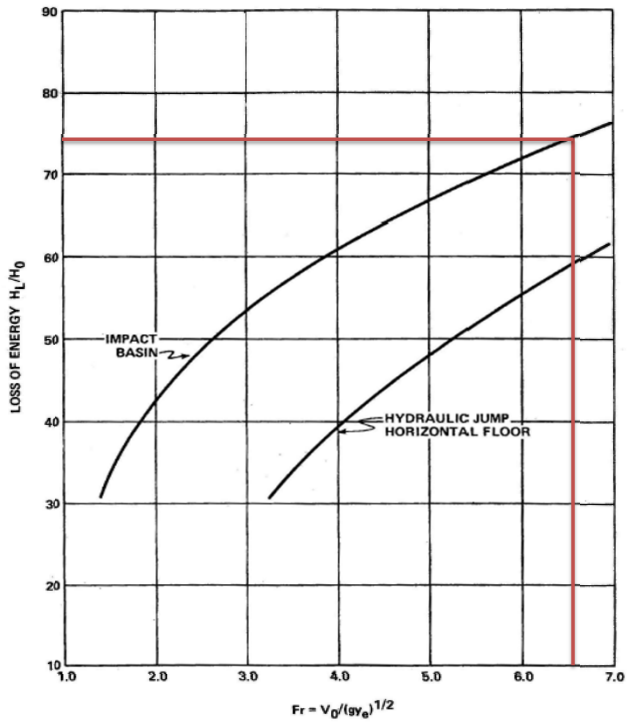


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 12
(1ST STREET BRIDGE)

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Worksheet for 12 Existing

Project Description

Solve For	Spread

Input Data

Discharge		5.19	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		6.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread	12.97	ft
Depth	4.13	in
Gutter Depression	1.02	in
Total Depression	5.02	in
Open Grate Area	2.70	ft²
Active Grate Weir Length	5.00	ft

Worksheet for 12 Upgrade

Project Description

Solve For	Spread

Input Data

Discharge		5.19	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		7.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	18.91	ft
Depth	5.68	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10031.440	140.030	.292	140.322	5.19	21.46	7.15	147.47	.00	.88	1.19	1.500	.000	.00	1 .0
1.495	.0090					.3756	.56	.29	8.38	.77	.013	.00	.00	PIPE
10032.940	140.043	.284	140.328	5.19	22.27	7.70	148.03	.00	.88	1.18	1.500	.000	.00	1 .0
1.834	.0090					.4240	.78	.28	8.81	.77	.013	.00	.00	PIPE
10034.770	140.060	.275	140.335	5.19	23.36	8.47	148.81	.00	.88	1.16	1.500	.000	.00	1 .0
51.116	.4521					.4520	23.10	.28	9.41	.28	.013	.00	.00	PIPE
10085.890	163.167	.275	163.442	5.19	23.34	8.46	171.90	.00	.88	1.16	1.500	.000	.00	1 .0
25.811	.4521					.4226	10.91	.28	9.40	.28	.013	.00	.00	PIPE
10111.700	174.835	.284	175.119	5.19	22.25	7.69	182.81	.00	.88	1.18	1.500	.000	.00	1 .0
8.318	.4521					.3692	3.07	.28	8.80	.28	.013	.00	.00	PIPE
10120.010	178.595	.294	178.889	5.19	21.21	6.99	185.88	.00	.88	1.19	1.500	.000	.00	1 .0
4.838	.4521					.3228	1.56	.29	8.25	.28	.013	.00	.00	PIPE
10124.850	180.782	.304	181.086	5.19	20.23	6.35	187.44	.00	.88	1.21	1.500	.000	.00	1 .0
3.337	.4521					.2820	.94	.30	7.73	.28	.013	.00	.00	PIPE
10128.190	182.290	.314	182.605	5.19	19.29	5.78	188.38	.00	.88	1.22	1.500	.000	.00	1 .0
2.500	.4521					.2464	.62	.31	7.24	.28	.013	.00	.00	PIPE
10130.690	183.420	.325	183.746	5.19	18.39	5.25	189.00	.00	.88	1.24	1.500	.000	.00	1 .0
1.971	.4521					.2155	.42	.33	6.78	.28	.013	.00	.00	PIPE

Program Package Serial Number: 1553

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MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10132.660	184.311	.336	184.648	5.19	17.53	4.77	189.42	.00	.88	1.25	1.500	.000	.00	1 .0
1.604	.4521					.1882	.30	.34	6.35	.28	.013	.00	.00	PIPE
10134.260	185.036	.347	185.383	5.19	16.72	4.34	189.72	.00	.88	1.27	1.500	.000	.00	1 .0
1.330	.4521					.1645	.22	.35	5.95	.28	.013	.00	.00	PIPE
10135.590	185.637	.359	185.996	5.19	15.94	3.94	189.94	.00	.88	1.28	1.500	.000	.00	1 .0
1.124	.4521					.1438	.16	.36	5.57	.28	.013	.00	.00	PIPE
10136.720	186.146	.371	186.517	5.19	15.20	3.59	190.10	.00	.88	1.29	1.500	.000	.00	1 .0
.959	.4521					.1258	.12	.37	5.21	.28	.013	.00	.00	PIPE
10137.680	186.579	.384	186.963	5.19	14.49	3.26	190.22	.00	.88	1.31	1.500	.000	.00	1 .0
.826	.4521					.1101	.09	.38	4.88	.28	.013	.00	.00	PIPE
10138.500	186.953	.398	187.351	5.19	13.81	2.96	190.31	.00	.88	1.32	1.500	.000	.00	1 .0
.721	.4521					.0963	.07	.40	4.57	.28	.013	.00	.00	PIPE
10139.220	187.278	.411	187.690	5.19	13.17	2.69	190.38	.00	.88	1.34	1.500	.000	.00	1 .0
.625	.4521					.0843	.05	.41	4.28	.28	.013	.00	.00	PIPE
10139.850	187.561	.426	187.987	5.19	12.56	2.45	190.44	.00	.88	1.35	1.500	.000	.00	1 .0
.552	.4521					.0738	.04	.43	4.00	.28	.013	.00	.00	PIPE
10140.400	187.810	.440	188.250	5.19	11.97	2.23	190.48	.00	.88	1.37	1.500	.000	.00	1 .0
.481	.4521					.0645	.03	.44	3.75	.28	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10140.880	188.028	.456	188.484	5.19	11.42	2.02	190.51	.00	.88	1.38	1.500	.000	.00	1 .0
.425	.4521					.0565	.02	.46	3.51	.28	.013	.00	.00	PIPE
10141.310	188.220	.472	188.692	5.19	10.89	1.84	190.53	.00	.88	1.39	1.500	.000	.00	1 .0
.376	.4521					.0495	.02	.47	3.28	.28	.013	.00	.00	PIPE
10141.680	188.390	.488	188.878	5.19	10.38	1.67	190.55	.00	.88	1.41	1.500	.000	.00	1 .0
.328	.4521					.0434	.01	.49	3.07	.28	.013	.00	.00	PIPE
10142.010	188.538	.506	189.044	5.19	9.90	1.52	190.56	.00	.88	1.42	1.500	.000	.00	1 .0
.290	.4521					.0380	.01	.51	2.87	.28	.013	.00	.00	PIPE
10142.300	188.669	.524	189.193	5.19	9.44	1.38	190.58	.00	.88	1.43	1.500	.000	.00	1 .0
.257	.4521					.0333	.01	.52	2.68	.28	.013	.00	.00	PIPE
10142.560	188.786	.542	189.328	5.19	9.00	1.26	190.58	.00	.88	1.44	1.500	.000	.00	1 .0
.223	.4521					.0292	.01	.54	2.51	.28	.013	.00	.00	PIPE
10142.780	188.886	.562	189.448	5.19	8.58	1.14	190.59	.00	.88	1.45	1.500	.000	.00	1 .0
.196	.4521					.0256	.01	.56	2.34	.28	.013	.00	.00	PIPE
10142.980	188.975	.582	189.557	5.19	8.18	1.04	190.60	.00	.88	1.46	1.500	.000	.00	1 .0
.171	.4521					.0225	.00	.58	2.19	.28	.013	.00	.00	PIPE
10143.150	189.053	.603	189.656	5.19	7.80	.94	190.60	.00	.88	1.47	1.500	.000	.00	1 .0
.147	.4521					.0197	.00	.60	2.04	.28	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10143.290	189.119	.625	189.744	5.19	7.44	.86	190.60	.00	.88	1.48	1.500	.000	.00	1 .0
.127	.4521					.0173	.00	.63	1.91	.28	.013	.00	.00	PIPE
10143.420	189.177	.648	189.825	5.19	7.09	.78	190.61	.00	.88	1.49	1.500	.000	.00	1 .0
.107	.4521					.0152	.00	.65	1.78	.28	.013	.00	.00	PIPE
10143.530	189.225	.672	189.897	5.19	6.76	.71	190.61	.00	.88	1.49	1.500	.000	.00	1 .0
.090	.4521					.0134	.00	.67	1.66	.28	.013	.00	.00	PIPE
10143.620	189.266	.697	189.963	5.19	6.44	.64	190.61	.00	.88	1.50	1.500	.000	.00	1 .0
.072	.4521					.0118	.00	.70	1.55	.28	.013	.00	.00	PIPE
10143.690	189.298	.724	190.022	5.19	6.14	.59	190.61	.00	.88	1.50	1.500	.000	.00	1 .0
.060	.4521					.0104	.00	.72	1.44	.28	.013	.00	.00	PIPE
10143.750	189.325	.751	190.076	5.19	5.86	.53	190.61	.00	.88	1.50	1.500	.000	.00	1 .0
.044	.4521					.0091	.00	.75	1.34	.28	.013	.00	.00	PIPE
10143.790	189.345	.780	190.125	5.19	5.59	.48	190.61	.00	.88	1.50	1.500	.000	.00	1 .0
.031	.4521					.0080	.00	.78	1.25	.28	.013	.00	.00	PIPE
10143.830	189.359	.810	190.169	5.19	5.33	.44	190.61	.00	.88	1.50	1.500	.000	.00	1 .0
.019	.4521					.0071	.00	.81	1.16	.28	.013	.00	.00	PIPE
10143.840	189.368	.842	190.210	5.19	5.08	.40	190.61	.00	.88	1.49	1.500	.000	.00	1 .0
.005	.4521					.0063	.00	.84	1.08	.28	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10143.850	189.370	.877	190.247	5.19	4.84	.36	190.61	.00	.88	1.48	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10143.850	189.370	1.394	190.764	5.19	.93	.01	190.78	.00	.37	4.00	6.000	4.000	.00	0 .0
.748	.0850					.0001	.00	1.39	.14	.15	.013	.00	.00	BOX
10144.600	189.434	1.329	190.763	5.19	.98	.01	190.78	.00	.37	4.00	6.000	4.000	.00	0 .0
.711	.0850					.0001	.00	1.33	.15	.15	.013	.00	.00	BOX
10145.310	189.494	1.267	190.761	5.19	1.02	.02	190.78	.00	.37	4.00	6.000	4.000	.00	0 .0
.378	.0850					.0001	.00	1.27	.16	.15	.013	.00	.00	BOX
10145.690	189.526	1.233	190.759	5.19	1.05	.02	190.78	.00	.37	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
10145.690	189.526	.065	189.592	5.19	19.86	6.12	195.71	.00	.37	4.00	6.000	4.000	.00	0 .0
.471	.0850					1.2986	.61	.07	13.69	.15	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.29859														
10146.160	189.566	.062	189.629	5.19	20.83	6.74	196.36	.00	.37	4.00	6.000	4.000	.00	0 .0
.468	.0850					1.5192	.71	.06	14.70	.15	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.51924														
10146.630	189.606	.059	189.665	5.19	21.84	7.41	197.07	.00	.37	4.00	6.000	4.000	.00	0 .0
.437	.0850					1.7775	.78	.06	15.79	.15	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 1.77754														
10147.060	189.643	.057	189.700	5.19	22.91	8.15	197.85	.00	.37	4.00	6.000	4.000	.00	0 .0
.407	.0850					2.0799	.85	.06	16.96	.15	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.07993														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10147.470	189.678	.054	189.732	5.19	24.03	8.96	198.70	.00	.37	4.00	6.000	4.000	.00	0 .0
.381	.0850					2.4339	.93	.05	18.22	.15	.013	.00	.00	BOX
WARNING: POSSIBLE ERROR IN CALCULATIONS, PROGRAM USES MANNINGS, EQUATION, AVERAGE FRICTION SLOPE = 2.43395														
10147.850	189.710	.051	189.761	5.19	25.20	9.86	199.62	.00	.37	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10147.850	189.710	.261	189.972	5.19	25.13	9.80	199.77	.00	.88	1.14	1.500	.000	.00	1 .0
14.193	.5745					.5367	7.62	.26	10.39	.26	.013	.00	.00	PIPE
10162.040	197.864	.266	198.131	5.19	24.47	9.30	207.43	.00	.88	1.15	1.500	.000	.00	1 .0
9.232	.5745					.4839	4.47	.27	10.03	.26	.013	.00	.00	PIPE
10171.270	203.169	.275	203.444	5.19	23.34	8.46	211.90	.00	.88	1.16	1.500	.000	.00	1 .0
5.001	.5745					.4226	2.11	.28	9.40	.26	.013	.00	.00	PIPE
10176.280	206.042	.284	206.326	5.19	22.25	7.69	214.01	.00	.88	1.18	1.500	.000	.00	1 .0
3.355	.5745					.3692	1.24	.28	8.80	.26	.013	.00	.00	PIPE
10179.630	207.969	.294	208.263	5.19	21.21	6.99	215.25	.00	.88	1.19	1.500	.000	.00	1 .0
2.483	.5745					.3228	.80	.29	8.25	.26	.013	.00	.00	PIPE
10182.110	209.396	.304	209.701	5.19	20.23	6.35	216.05	.00	.88	1.21	1.500	.000	.00	1 .0
1.940	.5745					.2820	.55	.30	7.73	.26	.013	.00	.00	PIPE
10184.050	210.511	.314	210.825	5.19	19.29	5.78	216.60	.00	.88	1.22	1.500	.000	.00	1 .0
1.566	.5745					.2464	.39	.31	7.24	.26	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10185.620	211.411	.325	211.736	5.19	18.39	5.25	216.99	.00	.88	1.24	1.500	.000	.00	1 .0
1.299	.5745					.2155	.28	.33	6.78	.26	.013	.00	.00	PIPE
10186.920	212.157	.336	212.493	5.19	17.53	4.77	217.27	.00	.88	1.25	1.500	.000	.00	1 .0
1.095	.5745					.1882	.21	.34	6.35	.26	.013	.00	.00	PIPE
10188.010	212.786	.347	213.133	5.19	16.72	4.34	217.47	.00	.88	1.27	1.500	.000	.00	1 .0
.933	.5745					.1645	.15	.35	5.95	.26	.013	.00	.00	PIPE
10188.950	213.322	.359	213.681	5.19	15.94	3.94	217.63	.00	.88	1.28	1.500	.000	.00	1 .0
.805	.5745					.1438	.12	.36	5.57	.26	.013	.00	.00	PIPE
10189.750	213.784	.371	214.156	5.19	15.20	3.59	217.74	.00	.88	1.29	1.500	.000	.00	1 .0
.697	.5745					.1258	.09	.37	5.21	.26	.013	.00	.00	PIPE
10190.450	214.185	.384	214.569	5.19	14.49	3.26	217.83	.00	.88	1.31	1.500	.000	.00	1 .0
.608	.5745					.1101	.07	.38	4.88	.26	.013	.00	.00	PIPE
10191.060	214.534	.398	214.933	5.19	13.81	2.96	217.90	.00	.88	1.32	1.500	.000	.00	1 .0
.536	.5745					.0963	.05	.40	4.57	.26	.013	.00	.00	PIPE
10191.590	214.842	.411	215.254	5.19	13.17	2.69	217.95	.00	.88	1.34	1.500	.000	.00	1 .0
.469	.5745					.0843	.04	.41	4.28	.26	.013	.00	.00	PIPE
10192.060	215.112	.426	215.538	5.19	12.56	2.45	217.99	.00	.88	1.35	1.500	.000	.00	1 .0
.417	.5745					.0738	.03	.43	4.00	.26	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10192.480	215.351	.440	215.791	5.19	11.97	2.23	218.02	.00	.88	1.37	1.500	.000	.00	1 .0
.365	.5745					.0645	.02	.44	3.75	.26	.013	.00	.00	PIPE
10192.840	215.561	.456	216.017	5.19	11.42	2.02	218.04	.00	.88	1.38	1.500	.000	.00	1 .0
.324	.5745					.0565	.02	.46	3.51	.26	.013	.00	.00	PIPE
10193.170	215.748	.472	216.220	5.19	10.89	1.84	218.06	.00	.88	1.39	1.500	.000	.00	1 .0
.288	.5745					.0495	.01	.47	3.28	.26	.013	.00	.00	PIPE
10193.460	215.913	.488	216.401	5.19	10.38	1.67	218.07	.00	.88	1.41	1.500	.000	.00	1 .0
.252	.5745					.0434	.01	.49	3.07	.26	.013	.00	.00	PIPE
10193.710	216.058	.506	216.564	5.19	9.90	1.52	218.09	.00	.88	1.42	1.500	.000	.00	1 .0
.225	.5745					.0380	.01	.51	2.87	.26	.013	.00	.00	PIPE
10193.930	216.187	.524	216.711	5.19	9.44	1.38	218.09	.00	.88	1.43	1.500	.000	.00	1 .0
.199	.5745					.0333	.01	.52	2.68	.26	.013	.00	.00	PIPE
10194.130	216.301	.542	216.843	5.19	9.00	1.26	218.10	.00	.88	1.44	1.500	.000	.00	1 .0
.173	.5745					.0292	.01	.54	2.51	.26	.013	.00	.00	PIPE
10194.310	216.401	.562	216.963	5.19	8.58	1.14	218.11	.00	.88	1.45	1.500	.000	.00	1 .0
.152	.5745					.0256	.00	.56	2.34	.26	.013	.00	.00	PIPE
10194.460	216.488	.582	217.071	5.19	8.18	1.04	218.11	.00	.88	1.46	1.500	.000	.00	1 .0
.133	.5745					.0225	.00	.58	2.19	.26	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10194.590	216.565	.603	217.168	5.19	7.80	.94	218.11	.00	.88	1.47	1.500	.000	.00	1 .0
.115	.5745					.0197	.00	.60	2.04	.26	.013	.00	.00	PIPE
10194.710	216.631	.625	217.256	5.19	7.44	.86	218.11	.00	.88	1.48	1.500	.000	.00	1 .0
.099	.5745					.0173	.00	.63	1.91	.26	.013	.00	.00	PIPE
10194.800	216.688	.648	217.336	5.19	7.09	.78	218.12	.00	.88	1.49	1.500	.000	.00	1 .0
.084	.5745					.0152	.00	.65	1.78	.26	.013	.00	.00	PIPE
10194.890	216.736	.672	217.408	5.19	6.76	.71	218.12	.00	.88	1.49	1.500	.000	.00	1 .0
.070	.5745					.0134	.00	.67	1.66	.26	.013	.00	.00	PIPE
10194.960	216.776	.697	217.473	5.19	6.44	.64	218.12	.00	.88	1.50	1.500	.000	.00	1 .0
.057	.5745					.0118	.00	.70	1.55	.26	.013	.00	.00	PIPE
10195.020	216.809	.724	217.533	5.19	6.14	.59	218.12	.00	.88	1.50	1.500	.000	.00	1 .0
.047	.5745					.0104	.00	.72	1.44	.26	.013	.00	.00	PIPE
10195.060	216.835	.751	217.587	5.19	5.86	.53	218.12	.00	.88	1.50	1.500	.000	.00	1 .0
.034	.5745					.0091	.00	.75	1.34	.26	.013	.00	.00	PIPE
10195.100	216.855	.780	217.635	5.19	5.59	.48	218.12	.00	.88	1.50	1.500	.000	.00	1 .0
.024	.5745					.0080	.00	.78	1.25	.26	.013	.00	.00	PIPE
10195.120	216.869	.810	217.680	5.19	5.33	.44	218.12	.00	.88	1.50	1.500	.000	.00	1 .0
.015	.5745					.0071	.00	.81	1.16	.26	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10195.140	216.878	.842	217.720	5.19	5.08	.40	218.12	.00	.88	1.49	1.500	.000	.00	1 .0
.004	.5745					.0063	.00	.84	1.08	.26	.013	.00	.00	PIPE
10195.140	216.880	.877	217.757	5.19	4.84	.36	218.12	.00	.88	1.48	1.500	.000	.00	1 .0
WALL	ENTRANCE													
10195.140	216.880	1.394	218.274	5.19	.93	.01	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.748	.0850					.0001	.00	1.39	.14	.15	.013	.00	.00	BOX
10195.890	216.944	1.329	218.273	5.19	.98	.01	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.711	.0850					.0001	.00	1.33	.15	.15	.013	.00	.00	BOX
10196.600	217.004	1.267	218.271	5.19	1.02	.02	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.676	.0850					.0001	.00	1.27	.16	.15	.013	.00	.00	BOX
10197.270	217.061	1.208	218.270	5.19	1.07	.02	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.642	.0850					.0001	.00	1.21	.17	.15	.013	.00	.00	BOX
10197.920	217.116	1.152	218.268	5.19	1.13	.02	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.608	.0850					.0002	.00	1.15	.18	.15	.013	.00	.00	BOX
10198.520	217.168	1.099	218.266	5.19	1.18	.02	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.577	.0850					.0002	.00	1.10	.20	.15	.013	.00	.00	BOX
10199.100	217.217	1.047	218.264	5.19	1.24	.02	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
.037	.0850					.0002	.00	1.05	.21	.15	.013	.00	.00	BOX

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:15

MAPLE CANYON
SYSTEM 12

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10199.140	217.220	1.045	218.265	5.19	1.24	.02	218.29	.00	.37	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10199.140	217.220	1.045	218.265	5.19	3.95	.24	218.51	.00	.88	1.38	1.500	.000	.00	1 .0
1.284	.0192				.0037	.00	1.05	.71	.62	.013	.00	.00	PIPE	
10200.420	217.245	1.001	218.246	5.19	4.14	.27	218.51	.00	.88	1.41	1.500	.000	.00	1 .0
.716	.0192				.0042	.00	1.00	.77	.62	.013	.00	.00	PIPE	
10201.140	217.258	.960	218.218	5.19	4.34	.29	218.51	.00	.88	1.44	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
10201.140	217.258	.780	218.038	5.19	5.59	.48	218.52	.00	.88	1.50	1.500	.000	.00	1 .0
.800	.0192				.0080	.01	.78	1.25	.62	.013	.00	.00	PIPE	
10201.940	217.274	.810	218.084	5.19	5.33	.44	218.52	.00	.88	1.50	1.500	.000	.00	1 .0
.666	.0192				.0071	.00	.81	1.16	.62	.013	.00	.00	PIPE	
10202.610	217.286	.842	218.129	5.19	5.08	.40	218.53	.00	.88	1.49	1.500	.000	.00	1 .0
.185	.0192				.0063	.00	.84	1.08	.62	.013	.00	.00	PIPE	
10202.790	217.290	.877	218.167	5.19	4.84	.36	218.53	.00	.88	1.48	1.500	.000	.00	1 .0

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System 12

Q =	5.19	cfs
V =	21.46	ft/sec
D =	0.292	ft
A =	0.241845	ft^2
Ye =	0.347739	ft
g =	32.2	ft/sec^2
Fr =	6.413201	
From Figure 7-2		
Ho =	7.443112	
HLoss/Ho	0.74	
HLoss =	5.507903	
Remaining Energy	1.935209	
Area Above Sill		
Height	0.9	ft
Width	8.5	ft
Area Above Sill	7.65	in
Depth of Sill	0.916667	ft
Total Depth =	1.816667	ft
Velocity	0.678431	ft/sec
TH	1.823814	OK

Figure 7-2

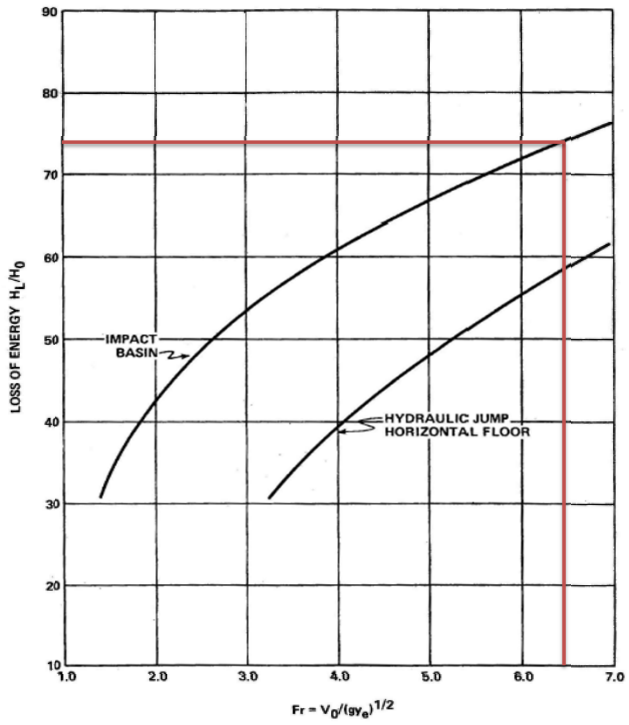


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 13
(1ST & NUTMEG)

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Worksheet for 13A Existing

Project Description

Solve For	Efficiency

Input Data

Discharge		17.82	ft³/s
Slope		8.00	%
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	31.77	%
Intercepted Flow	5.66	ft³/s
Bypass Flow	12.16	ft³/s
Spread	14.03	ft
Depth	3.37	in
Flow Area	1.97	ft²
Gutter Depression	0.00	in
Total Depression	0.00	in
Velocity	9.05	ft/s
Splash Over Velocity	8.15	ft/s
Frontal Flow Factor	0.92	
Side Flow Factor	0.01	
Grate Flow Ratio	0.34	
Active Grate Length	2.01	ft

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for 13B Existing

Project Description

Solve For	Efficiency

Input Data

Discharge		3.05	ft³/s
Slope		8.00	%
Gutter Width		0.00	ft
Gutter Cross Slope		0.00	%
Road Cross Slope		2.00	%
Roughness Coefficient		0.015	
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		33.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency		58.98	%
Intercepted Flow		1.80	ft³/s
Bypass Flow		1.25	ft³/s
Spread		7.24	ft
Depth		1.74	in
Flow Area		0.52	ft²
Gutter Depression		0.00	in
Total Depression		0.00	in
Velocity		5.82	ft/s
Splash Over Velocity		8.15	ft/s
Frontal Flow Factor		1.00	
Side Flow Factor		0.03	
Grate Flow Ratio		0.58	
Active Grate Length		2.01	ft

Worksheet for 13C Existing

Project Description

Solve For	Spread

Input Data

Discharge		23.63	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		4.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	232.71	ft
Depth	56.99	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 13D Existing

Project Description

Solve For	Spread

Input Data

Discharge		17.70	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		4.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	126.66	ft
Depth	31.54	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for 13A Upgrade

Project Description

Solve For	Efficiency

Input Data

Discharge	17.82	ft³/s
Slope	8.00	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	20.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	67.35	%
Intercepted Flow	12.00	ft³/s
Bypass Flow	5.82	ft³/s
Spread	13.61	ft
Depth	4.41	in
Flow Area	1.92	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	9.27	ft/s
Equivalent Cross Slope	0.1137	ft/ft
Length Factor	0.46	
Total Interception Length	43.19	ft

Worksheet for 13B Upgrade

Project Description

Solve For	Efficiency

Input Data

Discharge	3.05	ft³/s
Slope	8.00	%
Gutter Width	1.50	ft
Gutter Cross Slope	8.33	%
Road Cross Slope	2.00	%
Roughness Coefficient	0.015	
Curb Opening Length	4.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	44.65	%
Intercepted Flow	1.36	ft³/s
Bypass Flow	1.69	ft³/s
Spread	6.33	ft
Depth	2.66	in
Flow Area	0.47	ft²
Gutter Depression	1.14	in
Total Depression	5.14	in
Velocity	6.46	ft/s
Equivalent Cross Slope	0.2090	ft/ft
Length Factor	0.28	
Total Interception Length	14.28	ft

Worksheet for ~2015 13C - Max Spread = 26-ft

Project Description

Solve For	Spread

Input Data

Discharge		13.23	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		1.54	%
Curb Opening Length		20.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	26.00	ft
Depth	6.03	in
Gutter Depression	1.22	in
Total Depression	5.22	in

Worksheet for ~2015 13D - Include weir spilled from 13C

Project Description

Solve For	Spread

Input Data

Discharge		17.63	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		7.34	%
Curb Opening Length		20.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	6.61	ft
Depth	6.00	in
Gutter Depression	0.18	in
Total Depression	4.18	in

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10131.230	136.900	1.065	137.965	58.27	25.94	10.45	148.41	.00	2.47	2.87	3.000	.000	.00	1 .0
3.298	.0206					.1070	.35	1.06	5.17	1.69	.013	.00	.00	PIPE
10134.530	136.968	1.053	138.021	58.27	26.32	10.75	148.78	.00	2.47	2.86	3.000	.000	.00	1 .0
10.802	.0206					.1168	1.26	1.05	5.27	1.69	.013	.00	.00	PIPE
10145.330	137.190	1.017	138.207	58.27	27.60	11.83	150.04	.00	2.47	2.84	3.000	.000	.00	1 .0
JUNCT STR	.0825					.1877	.75	1.02	5.64		.013	.00	.00	PIPE
10149.330	137.520	.775	138.295	48.79	33.74	17.67	155.97	.00	2.27	2.63	3.000	.000	.00	1 .0
10.989	.3727					.2359	2.59	.77	8.01	.70	.013	.00	.00	PIPE
10160.320	141.616	.799	142.415	48.79	32.25	16.15	158.56	.00	2.27	2.65	3.000	.000	.00	1 .0
8.692	.3727					.2071	1.80	.80	7.52	.70	.013	.00	.00	PIPE
10169.010	144.856	.827	145.683	48.79	30.75	14.68	160.36	.00	2.27	2.68	3.000	.000	.00	1 .0
6.817	.3727					.1813	1.24	.83	7.04	.70	.013	.00	.00	PIPE
10175.830	147.397	.856	148.253	48.79	29.31	13.34	161.60	.00	2.27	2.71	3.000	.000	.00	1 .0
5.526	.3727					.1587	.88	.86	6.59	.70	.013	.00	.00	PIPE
10181.360	149.457	.886	150.344	48.79	27.95	12.13	162.47	.00	2.27	2.74	3.000	.000	.00	1 .0
4.584	.3727					.1389	.64	.89	6.17	.70	.013	.00	.00	PIPE
10185.940	151.166	.917	152.083	48.79	26.65	11.03	163.11	.00	2.27	2.76	3.000	.000	.00	1 .0
3.865	.3727					.1216	.47	.92	5.77	.70	.013	.00	.00	PIPE

Program Package Serial Number: 1553

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MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10189.800	152.607	.949	153.556	48.79	25.41	10.03	163.58	.00	2.27	2.79	3.000	.000	.00	1 .0
3.299	.3727					.1065	.35	.95	5.40	.70	.013	.00	.00	PIPE
10193.100	153.836	.982	154.818	48.79	24.23	9.11	163.93	.00	2.27	2.82	3.000	.000	.00	1 .0
2.840	.3727					.0933	.26	.98	5.05	.70	.013	.00	.00	PIPE
10195.940	154.895	1.017	155.912	48.79	23.10	8.29	164.20	.00	2.27	2.84	3.000	.000	.00	1 .0
2.465	.3727					.0817	.20	1.02	4.72	.70	.013	.00	.00	PIPE
10198.410	155.813	1.053	156.867	48.79	22.02	7.53	164.40	.00	2.27	2.86	3.000	.000	.00	1 .0
2.148	.3727					.0717	.15	1.05	4.41	.70	.013	.00	.00	PIPE
10200.560	156.614	1.091	157.705	48.79	21.00	6.85	164.55	.00	2.27	2.89	3.000	.000	.00	1 .0
1.883	.3727					.0628	.12	1.09	4.12	.70	.013	.00	.00	PIPE
10202.440	157.316	1.130	158.446	48.79	20.02	6.22	164.67	.00	2.27	2.91	3.000	.000	.00	1 .0
1.652	.3727					.0551	.09	1.13	3.85	.70	.013	.00	.00	PIPE
10204.090	157.932	1.171	159.103	48.79	19.09	5.66	164.76	.00	2.27	2.93	3.000	.000	.00	1 .0
1.456	.3727					.0484	.07	1.17	3.60	.70	.013	.00	.00	PIPE
10205.550	158.475	1.213	159.688	48.79	18.20	5.14	164.83	.00	2.27	2.94	3.000	.000	.00	1 .0
1.282	.3727					.0424	.05	1.21	3.36	.70	.013	.00	.00	PIPE
10206.830	158.953	1.257	160.210	48.79	17.35	4.68	164.89	.00	2.27	2.96	3.000	.000	.00	1 .0
1.127	.3727					.0373	.04	1.26	3.14	.70	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10207.960	159.373	1.304	160.677	48.79	16.55	4.25	164.93	.00	2.27	2.97	3.000	.000	.00	1 .0
.996	.3727					.0328	.03	1.30	2.93	.70	.013	.00	.00	PIPE
10208.950	159.744	1.352	161.096	48.79	15.78	3.87	164.96	.00	2.27	2.99	3.000	.000	.00	1 .0
.876	.3727					.0288	.03	1.35	2.73	.70	.013	.00	.00	PIPE
10209.830	160.071	1.402	161.473	48.79	15.04	3.51	164.99	.00	2.27	2.99	3.000	.000	.00	1 .0
.767	.3727					.0253	.02	1.40	2.55	.70	.013	.00	.00	PIPE
10210.600	160.357	1.455	161.812	48.79	14.34	3.19	165.01	.00	2.27	3.00	3.000	.000	.00	1 .0
.669	.3727					.0223	.01	1.46	2.37	.70	.013	.00	.00	PIPE
10211.260	160.606	1.511	162.117	48.79	13.68	2.90	165.02	.00	2.27	3.00	3.000	.000	.00	1 .0
.583	.3727					.0196	.01	1.51	2.21	.70	.013	.00	.00	PIPE
10211.850	160.823	1.569	162.393	48.79	13.04	2.64	165.03	.00	2.27	3.00	3.000	.000	.00	1 .0
.504	.3727					.0173	.01	1.57	2.06	.70	.013	.00	.00	PIPE
10212.350	161.011	1.630	162.641	48.79	12.43	2.40	165.04	.00	2.27	2.99	3.000	.000	.00	1 .0
.432	.3727					.0153	.01	1.63	1.91	.70	.013	.00	.00	PIPE
10212.780	161.172	1.694	162.866	48.79	11.85	2.18	165.05	.00	2.27	2.97	3.000	.000	.00	1 .0
.363	.3727					.0135	.00	1.69	1.78	.70	.013	.00	.00	PIPE
10213.150	161.307	1.762	163.069	48.79	11.30	1.98	165.05	.00	2.27	2.95	3.000	.000	.00	1 .0
.303	.3727					.0119	.00	1.76	1.65	.70	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10213.450	161.420	1.833	163.253	48.79	10.78	1.80	165.06	.00	2.27	2.93	3.000	.000	.00	1 .0
.243	.3727					.0106	.00	1.83	1.53	.70	.013	.00	.00	PIPE
10213.690	161.511	1.909	163.420	48.79	10.27	1.64	165.06	.00	2.27	2.89	3.000	.000	.00	1 .0
.188	.3727					.0094	.00	1.91	1.41	.70	.013	.00	.00	PIPE
10213.880	161.580	1.990	163.570	48.79	9.80	1.49	165.06	.00	2.27	2.84	3.000	.000	.00	1 .0
.133	.3727					.0083	.00	1.99	1.30	.70	.013	.00	.00	PIPE
10214.010	161.630	2.077	163.707	48.79	9.34	1.35	165.06	.00	2.27	2.77	3.000	.000	.00	1 .0
.080	.3727					.0074	.00	2.08	1.20	.70	.013	.00	.00	PIPE
10214.090	161.660	2.171	163.831	48.79	8.91	1.23	165.06	.00	2.27	2.68	3.000	.000	.00	1 .0
.027	.3727					.0066	.00	2.17	1.10	.70	.013	.00	.00	PIPE
10214.120	161.670	2.274	163.944	48.79	8.49	1.12	165.06	.00	2.27	2.57	3.000	.000	.00	1 .0
WALL	ENTRANCE													
10214.120	161.670	3.835	165.505	48.79	3.18	.16	165.66	.00	1.67	4.00	6.000	4.000	.00	0 .0
10214.120	161.670	.360	162.030	48.79	33.84	17.78	179.81	.00	1.67	4.00	6.000	4.000	.00	0 .0
4.000	.0850					.4553	1.82	.36	9.93	.61	.013	.00	.00	BOX
10218.120	162.010	.346	162.356	48.79	35.25	19.30	181.66	.00	1.67	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10218.120	162.010	.753	162.763	48.79	35.12	19.16	181.92	.00	2.27	2.60	3.000	.000	.00	1 .0
7.131	.4596					.2669	1.90	.75	8.47	.67	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10225.250	165.287	.773	166.060	48.79	33.82	17.76	183.82	.00	2.27	2.62	3.000	.000	.00	1 .0
7.130	.4596					.2368	1.69	.77	8.04	.67	.013	.00	.00	PIPE
10232.380	168.564	.799	169.363	48.79	32.25	16.15	185.51	.00	2.27	2.65	3.000	.000	.00	1 .0
5.703	.4596					.2071	1.18	.80	7.52	.67	.013	.00	.00	PIPE
10238.090	171.185	.827	172.012	48.79	30.75	14.68	186.69	.00	2.27	2.68	3.000	.000	.00	1 .0
4.690	.4596					.1813	.85	.83	7.04	.67	.013	.00	.00	PIPE
10242.780	173.341	.856	174.197	48.79	29.31	13.34	187.54	.00	2.27	2.71	3.000	.000	.00	1 .0
3.932	.4596					.1587	.62	.86	6.59	.67	.013	.00	.00	PIPE
10246.710	175.148	.886	176.034	48.79	27.95	12.13	188.16	.00	2.27	2.74	3.000	.000	.00	1 .0
3.343	.4596					.1389	.46	.89	6.17	.67	.013	.00	.00	PIPE
10250.050	176.684	.917	177.601	48.79	26.65	11.03	188.63	.00	2.27	2.76	3.000	.000	.00	1 .0
2.872	.4596					.1216	.35	.92	5.77	.67	.013	.00	.00	PIPE
10252.920	178.004	.949	178.953	48.79	25.41	10.03	188.98	.00	2.27	2.79	3.000	.000	.00	1 .0
2.488	.4596					.1065	.26	.95	5.40	.67	.013	.00	.00	PIPE
10255.410	179.147	.982	180.129	48.79	24.23	9.11	189.24	.00	2.27	2.82	3.000	.000	.00	1 .0
2.166	.4596					.0933	.20	.98	5.05	.67	.013	.00	.00	PIPE
10257.580	180.143	1.017	181.160	48.79	23.10	8.29	189.44	.00	2.27	2.84	3.000	.000	.00	1 .0
1.898	.4596					.0817	.16	1.02	4.72	.67	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10259.480	181.015	1.053	182.068	48.79	22.02	7.53	189.60	.00	2.27	2.86	3.000	.000	.00	1 .0
1.667	.4596					.0717	.12	1.05	4.41	.67	.013	.00	.00	PIPE
10261.140	181.781	1.091	182.872	48.79	21.00	6.85	189.72	.00	2.27	2.89	3.000	.000	.00	1 .0
1.471	.4596					.0628	.09	1.09	4.12	.67	.013	.00	.00	PIPE
10262.610	182.457	1.130	183.587	48.79	20.02	6.22	189.81	.00	2.27	2.91	3.000	.000	.00	1 .0
1.298	.4596					.0551	.07	1.13	3.85	.67	.013	.00	.00	PIPE
10263.910	183.053	1.171	184.225	48.79	19.09	5.66	189.88	.00	2.27	2.93	3.000	.000	.00	1 .0
1.149	.4596					.0484	.06	1.17	3.60	.67	.013	.00	.00	PIPE
10265.060	183.581	1.213	184.795	48.79	18.20	5.14	189.94	.00	2.27	2.94	3.000	.000	.00	1 .0
1.016	.4596					.0424	.04	1.21	3.36	.67	.013	.00	.00	PIPE
10266.080	184.048	1.257	185.305	48.79	17.35	4.68	189.98	.00	2.27	2.96	3.000	.000	.00	1 .0
.896	.4596					.0373	.03	1.26	3.14	.67	.013	.00	.00	PIPE
10266.970	184.460	1.304	185.764	48.79	16.55	4.25	190.02	.00	2.27	2.97	3.000	.000	.00	1 .0
.793	.4596					.0328	.03	1.30	2.93	.67	.013	.00	.00	PIPE
10267.760	184.824	1.352	186.176	48.79	15.78	3.87	190.04	.00	2.27	2.99	3.000	.000	.00	1 .0
.699	.4596					.0288	.02	1.35	2.73	.67	.013	.00	.00	PIPE
10268.460	185.146	1.402	186.548	48.79	15.04	3.51	190.06	.00	2.27	2.99	3.000	.000	.00	1 .0
.613	.4596					.0253	.02	1.40	2.55	.67	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10269.080	185.428	1.455	186.883	48.79	14.34	3.19	190.08	.00	2.27	3.00	3.000	.000	.00	1 .0
.536	.4596					.0223	.01	1.46	2.37	.67	.013	.00	.00	PIPE
10269.610	185.674	1.511	187.185	48.79	13.68	2.90	190.09	.00	2.27	3.00	3.000	.000	.00	1 .0
.468	.4596					.0196	.01	1.51	2.21	.67	.013	.00	.00	PIPE
10270.080	185.889	1.569	187.458	48.79	13.04	2.64	190.10	.00	2.27	3.00	3.000	.000	.00	1 .0
.404	.4596					.0173	.01	1.57	2.06	.67	.013	.00	.00	PIPE
10270.490	186.075	1.630	187.705	48.79	12.43	2.40	190.11	.00	2.27	2.99	3.000	.000	.00	1 .0
.347	.4596					.0153	.01	1.63	1.91	.67	.013	.00	.00	PIPE
10270.830	186.235	1.694	187.929	48.79	11.85	2.18	190.11	.00	2.27	2.97	3.000	.000	.00	1 .0
.292	.4596					.0135	.00	1.69	1.78	.67	.013	.00	.00	PIPE
10271.120	186.369	1.762	188.131	48.79	11.30	1.98	190.11	.00	2.27	2.95	3.000	.000	.00	1 .0
.244	.4596					.0119	.00	1.76	1.65	.67	.013	.00	.00	PIPE
10271.370	186.481	1.833	188.314	48.79	10.78	1.80	190.12	.00	2.27	2.93	3.000	.000	.00	1 .0
.196	.4596					.0106	.00	1.83	1.53	.67	.013	.00	.00	PIPE
10271.560	186.571	1.909	188.480	48.79	10.27	1.64	190.12	.00	2.27	2.89	3.000	.000	.00	1 .0
.151	.4596					.0094	.00	1.91	1.41	.67	.013	.00	.00	PIPE
10271.720	186.641	1.990	188.631	48.79	9.80	1.49	190.12	.00	2.27	2.84	3.000	.000	.00	1 .0
.107	.4596					.0083	.00	1.99	1.30	.67	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10271.820	186.690	2.077	188.767	48.79	9.34	1.35	190.12	.00	2.27	2.77	3.000	.000	.00	1 .0
.064	.4596					.0074	.00	2.08	1.20	.67	.013	.00	.00	PIPE
10271.890	186.720	2.171	188.891	48.79	8.91	1.23	190.12	.00	2.27	2.68	3.000	.000	.00	1 .0
.022	.4596					.0066	.00	2.17	1.10	.67	.013	.00	.00	PIPE
10271.910	186.730	2.274	189.004	48.79	8.49	1.12	190.12	.00	2.27	2.57	3.000	.000	.00	1 .0
WALL	ENTRANCE													
10271.910	186.730	3.835	190.565	48.79	3.18	.16	190.72	.00	1.67	4.00	6.000	4.000	.00	0 .0
10271.910	186.730	.359	187.089	48.79	33.93	17.88	204.97	.00	1.67	4.00	6.000	4.000	.00	0 .0
4.000	.0850					.4593	1.84	.36	9.97	.61	.013	.00	.00	BOX
10275.910	187.070	.345	187.415	48.79	35.36	19.41	206.83	.00	1.67	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10275.910	187.070	.751	187.821	48.79	35.21	19.25	207.08	.00	2.27	2.60	3.000	.000	.00	1 .0
4.147	.6232					.2679	1.11	.75	8.50	.62	.013	.00	.00	PIPE
10280.060	189.655	.773	190.428	48.79	33.82	17.76	208.19	.00	2.27	2.62	3.000	.000	.00	1 .0
4.111	.6232					.2368	.97	.77	8.04	.62	.013	.00	.00	PIPE
10284.170	192.217	.799	193.016	48.79	32.25	16.15	209.16	.00	2.27	2.65	3.000	.000	.00	1 .0
3.460	.6232					.2071	.72	.80	7.52	.62	.013	.00	.00	PIPE
10287.630	194.373	.827	195.200	48.79	30.75	14.68	209.88	.00	2.27	2.68	3.000	.000	.00	1 .0
2.954	.6232					.1813	.54	.83	7.04	.62	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10290.580	196.214	.856	197.070	48.79	29.31	13.34	210.41	.00	2.27	2.71	3.000	.000	.00	1 .0
2.547	.6232					.1587	.40	.86	6.59	.62	.013	.00	.00	PIPE
10293.130	197.801	.886	198.687	48.79	27.95	12.13	210.82	.00	2.27	2.74	3.000	.000	.00	1 .0
2.213	.6232					.1389	.31	.89	6.17	.62	.013	.00	.00	PIPE
10295.340	199.180	.917	200.098	48.79	26.65	11.03	211.13	.00	2.27	2.76	3.000	.000	.00	1 .0
1.935	.6232					.1216	.24	.92	5.77	.62	.013	.00	.00	PIPE
10297.280	200.386	.949	201.335	48.79	25.41	10.03	211.36	.00	2.27	2.79	3.000	.000	.00	1 .0
1.700	.6232					.1065	.18	.95	5.40	.62	.013	.00	.00	PIPE
10298.980	201.446	.982	202.428	48.79	24.23	9.11	211.54	.00	2.27	2.82	3.000	.000	.00	1 .0
1.497	.6232					.0933	.14	.98	5.05	.62	.013	.00	.00	PIPE
10300.480	202.379	1.017	203.396	48.79	23.10	8.29	211.68	.00	2.27	2.84	3.000	.000	.00	1 .0
1.324	.6232					.0817	.11	1.02	4.72	.62	.013	.00	.00	PIPE
10301.800	203.204	1.053	204.258	48.79	22.02	7.53	211.79	.00	2.27	2.86	3.000	.000	.00	1 .0
1.173	.6232					.0717	.08	1.05	4.41	.62	.013	.00	.00	PIPE
10302.970	203.935	1.091	205.026	48.79	21.00	6.85	211.87	.00	2.27	2.89	3.000	.000	.00	1 .0
1.041	.6232					.0628	.07	1.09	4.12	.62	.013	.00	.00	PIPE
10304.010	204.584	1.130	205.714	48.79	20.02	6.22	211.94	.00	2.27	2.91	3.000	.000	.00	1 .0
.924	.6232					.0551	.05	1.13	3.85	.62	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10304.940	205.160	1.171	206.331	48.79	19.09	5.66	211.99	.00	2.27	2.93	3.000	.000	.00	1 .0
.822	.6232					.0484	.04	1.17	3.60	.62	.013	.00	.00	PIPE
10305.760	205.672	1.213	206.885	48.79	18.20	5.14	212.03	.00	2.27	2.94	3.000	.000	.00	1 .0
.729	.6232					.0424	.03	1.21	3.36	.62	.013	.00	.00	PIPE
10306.490	206.127	1.257	207.384	48.79	17.35	4.68	212.06	.00	2.27	2.96	3.000	.000	.00	1 .0
.646	.6232					.0373	.02	1.26	3.14	.62	.013	.00	.00	PIPE
10307.140	206.529	1.304	207.833	48.79	16.55	4.25	212.08	.00	2.27	2.97	3.000	.000	.00	1 .0
.573	.6232					.0328	.02	1.30	2.93	.62	.013	.00	.00	PIPE
10307.710	206.886	1.352	208.238	48.79	15.78	3.87	212.10	.00	2.27	2.99	3.000	.000	.00	1 .0
.507	.6232					.0288	.01	1.35	2.73	.62	.013	.00	.00	PIPE
10308.220	207.202	1.402	208.604	48.79	15.04	3.51	212.12	.00	2.27	2.99	3.000	.000	.00	1 .0
.445	.6232					.0253	.01	1.40	2.55	.62	.013	.00	.00	PIPE
10308.660	207.480	1.455	208.935	48.79	14.34	3.19	212.13	.00	2.27	3.00	3.000	.000	.00	1 .0
.390	.6232					.0223	.01	1.46	2.37	.62	.013	.00	.00	PIPE
10309.050	207.723	1.511	209.234	48.79	13.68	2.90	212.14	.00	2.27	3.00	3.000	.000	.00	1 .0
.341	.6232					.0196	.01	1.51	2.21	.62	.013	.00	.00	PIPE
10309.390	207.936	1.569	209.505	48.79	13.04	2.64	212.14	.00	2.27	3.00	3.000	.000	.00	1 .0
.296	.6232					.0173	.01	1.57	2.06	.62	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10309.690	208.120	1.630	209.750	48.79	12.43	2.40	212.15	.00	2.27	2.99	3.000	.000	.00	1 .0
.254	.6232					.0153	.00	1.63	1.91	.62	.013	.00	.00	PIPE
10309.940	208.278	1.694	209.972	48.79	11.85	2.18	212.15	.00	2.27	2.97	3.000	.000	.00	1 .0
.214	.6232					.0135	.00	1.69	1.78	.62	.013	.00	.00	PIPE
10310.160	208.411	1.762	210.173	48.79	11.30	1.98	212.16	.00	2.27	2.95	3.000	.000	.00	1 .0
.179	.6232					.0119	.00	1.76	1.65	.62	.013	.00	.00	PIPE
10310.330	208.523	1.833	210.356	48.79	10.78	1.80	212.16	.00	2.27	2.93	3.000	.000	.00	1 .0
.144	.6232					.0106	.00	1.83	1.53	.62	.013	.00	.00	PIPE
10310.480	208.612	1.909	210.521	48.79	10.27	1.64	212.16	.00	2.27	2.89	3.000	.000	.00	1 .0
.110	.6232					.0094	.00	1.91	1.41	.62	.013	.00	.00	PIPE
10310.590	208.681	1.990	210.671	48.79	9.80	1.49	212.16	.00	2.27	2.84	3.000	.000	.00	1 .0
.079	.6232					.0083	.00	1.99	1.30	.62	.013	.00	.00	PIPE
10310.670	208.730	2.077	210.807	48.79	9.34	1.35	212.16	.00	2.27	2.77	3.000	.000	.00	1 .0
.047	.6232					.0074	.00	2.08	1.20	.62	.013	.00	.00	PIPE
10310.710	208.760	2.171	210.931	48.79	8.91	1.23	212.16	.00	2.27	2.68	3.000	.000	.00	1 .0
.017	.6232					.0066	.00	2.17	1.10	.62	.013	.00	.00	PIPE
10310.730	208.770	2.274	211.044	48.79	8.49	1.12	212.16	.00	2.27	2.57	3.000	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10310.730	208.770	3.835	212.605	48.79	3.18	.16	212.76	.00	1.67	4.00	6.000	4.000	.00	0 .0
10310.730	208.770	.512	209.282	48.79	23.81	8.80	218.09	.00	1.67	4.00	6.000	4.000	.00	0 .0
4.000	.0850					.1467	.59	.51	5.86	.61	.013	.00	.00	BOX
10314.730	209.110	.505	209.615	48.79	24.15	9.06	218.67	.00	1.67	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10314.730	209.110	.994	210.104	48.79	23.85	8.83	218.94	.00	2.27	2.82	3.000	.000	.00	1 .0
9.271	.1470					.0912	.85	.99	4.94	.89	.013	.00	.00	PIPE
10324.000	210.473	1.017	211.490	48.79	23.10	8.29	219.78	.00	2.27	2.84	3.000	.000	.00	1 .0
10.995	.1470					.0817	.90	1.02	4.72	.89	.013	.00	.00	PIPE
10335.000	212.089	1.053	213.142	48.79	22.02	7.53	220.67	.00	2.27	2.86	3.000	.000	.00	1 .0
8.587	.1470					.0717	.62	1.05	4.41	.89	.013	.00	.00	PIPE
10343.580	213.351	1.091	214.442	48.79	21.00	6.85	221.29	.00	2.27	2.89	3.000	.000	.00	1 .0
6.935	.1470					.0628	.44	1.09	4.12	.89	.013	.00	.00	PIPE
10350.520	214.370	1.130	215.500	48.79	20.02	6.22	221.72	.00	2.27	2.91	3.000	.000	.00	1 .0
5.714	.1470					.0551	.31	1.13	3.85	.89	.013	.00	.00	PIPE
10356.230	215.210	1.171	216.381	48.79	19.09	5.66	222.04	.00	2.27	2.93	3.000	.000	.00	1 .0
4.791	.1470					.0484	.23	1.17	3.60	.89	.013	.00	.00	PIPE
10361.020	215.914	1.213	217.127	48.79	18.20	5.14	222.27	.00	2.27	2.94	3.000	.000	.00	1 .0
4.053	.1470					.0424	.17	1.21	3.36	.89	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10365.080	216.510	1.257	217.767	48.79	17.35	4.68	222.44	.00	2.27	2.96	3.000	.000	.00	1 .0
3.447	.1470					.0373	.13	1.26	3.14	.89	.013	.00	.00	PIPE
10368.520	217.016	1.304	218.320	48.79	16.55	4.25	222.57	.00	2.27	2.97	3.000	.000	.00	1 .0
2.964	.1470					.0328	.10	1.30	2.93	.89	.013	.00	.00	PIPE
10371.490	217.452	1.352	218.804	48.79	15.78	3.87	222.67	.00	2.27	2.99	3.000	.000	.00	1 .0
2.550	.1470					.0288	.07	1.35	2.73	.89	.013	.00	.00	PIPE
10374.040	217.827	1.402	219.229	48.79	15.04	3.51	222.74	.00	2.27	2.99	3.000	.000	.00	1 .0
2.189	.1470					.0253	.06	1.40	2.55	.89	.013	.00	.00	PIPE
10376.230	218.148	1.455	219.604	48.79	14.34	3.19	222.80	.00	2.27	3.00	3.000	.000	.00	1 .0
1.880	.1470					.0223	.04	1.46	2.37	.89	.013	.00	.00	PIPE
10378.110	218.425	1.511	219.936	48.79	13.68	2.90	222.84	.00	2.27	3.00	3.000	.000	.00	1 .0
1.617	.1470					.0196	.03	1.51	2.21	.89	.013	.00	.00	PIPE
10379.720	218.662	1.569	220.232	48.79	13.04	2.64	222.87	.00	2.27	3.00	3.000	.000	.00	1 .0
1.381	.1470					.0173	.02	1.57	2.06	.89	.013	.00	.00	PIPE
10381.100	218.865	1.630	220.495	48.79	12.43	2.40	222.90	.00	2.27	2.99	3.000	.000	.00	1 .0
1.171	.1470					.0153	.02	1.63	1.91	.89	.013	.00	.00	PIPE
10382.270	219.037	1.694	220.732	48.79	11.85	2.18	222.91	.00	2.27	2.97	3.000	.000	.00	1 .0
.977	.1470					.0135	.01	1.69	1.78	.89	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10383.250	219.181	1.762	220.943	48.79	11.30	1.98	222.93	.00	2.27	2.95	3.000	.000	.00	1 .0
.810	.1470					.0119	.01	1.76	1.65	.89	.013	.00	.00	PIPE
10384.060	219.300	1.833	221.133	48.79	10.78	1.80	222.94	.00	2.27	2.93	3.000	.000	.00	1 .0
.645	.1470					.0106	.01	1.83	1.53	.89	.013	.00	.00	PIPE
10384.710	219.395	1.909	221.304	48.79	10.27	1.64	222.94	.00	2.27	2.89	3.000	.000	.00	1 .0
.494	.1470					.0094	.00	1.91	1.41	.89	.013	.00	.00	PIPE
10385.200	219.467	1.990	221.457	48.79	9.80	1.49	222.95	.00	2.27	2.84	3.000	.000	.00	1 .0
.350	.1470					.0083	.00	1.99	1.30	.89	.013	.00	.00	PIPE
10385.550	219.519	2.077	221.596	48.79	9.34	1.35	222.95	.00	2.27	2.77	3.000	.000	.00	1 .0
.209	.1470					.0074	.00	2.08	1.20	.89	.013	.00	.00	PIPE
10385.760	219.549	2.171	221.720	48.79	8.91	1.23	222.95	.00	2.27	2.68	3.000	.000	.00	1 .0
.072	.1470					.0066	.00	2.17	1.10	.89	.013	.00	.00	PIPE
10385.830	219.560	2.274	221.834	48.79	8.49	1.12	222.95	.00	2.27	2.57	3.000	.000	.00	1 .0
JUNCT STR	.0850					.0033	.01	2.27	1.00		.013	.00	.00	PIPE
10389.830	219.900	3.832	223.732	13.36	4.25	.28	224.01	.00	1.32	.00	2.000	.000	.00	1 .0
9.970	.1128					.0035	.03	3.83	.00	.57	.013	.00	.00	PIPE
10399.800	221.024	2.742	223.766	13.36	4.25	.28	224.05	.00	1.32	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10399.800	221.024	.598	221.622	13.36	16.93	4.45	226.07	.00	1.32	1.83	2.000	.000	.00	1 .0
1.452	.1128				.0919	.13	.60	4.54	.57	.013	.00	.00		PIPE
10401.250	221.188	.598	221.786	13.36	16.91	4.44	226.23	.00	1.32	1.83	2.000	.000	.00	1 .0
14.341	.1128				.0861	1.23	.60	4.54	.57	.013	.00	.00		PIPE
10415.590	222.805	.619	223.424	13.36	16.13	4.04	227.46	.00	1.32	1.85	2.000	.000	.00	1 .0
9.231	.1128				.0754	.70	.62	4.25	.57	.013	.00	.00		PIPE
10424.820	223.846	.641	224.487	13.36	15.37	3.67	228.16	.00	1.32	1.87	2.000	.000	.00	1 .0
6.668	.1128				.0660	.44	.64	3.97	.57	.013	.00	.00		PIPE
10431.490	224.598	.663	225.261	13.36	14.66	3.34	228.60	.00	1.32	1.88	2.000	.000	.00	1 .0
5.086	.1128				.0578	.29	.66	3.71	.57	.013	.00	.00		PIPE
10436.580	225.171	.687	225.858	13.36	13.98	3.03	228.89	.00	1.32	1.90	2.000	.000	.00	1 .0
4.056	.1128				.0507	.21	.69	3.47	.57	.013	.00	.00		PIPE
10440.630	225.628	.711	226.339	13.36	13.33	2.76	229.10	.00	1.32	1.91	2.000	.000	.00	1 .0
3.289	.1128				.0444	.15	.71	3.25	.57	.013	.00	.00		PIPE
10443.920	225.999	.737	226.736	13.36	12.71	2.51	229.24	.00	1.32	1.93	2.000	.000	.00	1 .0
2.736	.1128				.0390	.11	.74	3.03	.57	.013	.00	.00		PIPE
10446.660	226.308	.763	227.071	13.36	12.12	2.28	229.35	.00	1.32	1.94	2.000	.000	.00	1 .0
2.280	.1128				.0342	.08	.76	2.83	.57	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10448.940	226.565	.791	227.356	13.36	11.55 / 2.07 /	229.43	.00	1.32	1.96	2.000	.000	.00	1 .0
1.926	.1128				.0300	.06	.79	2.65	.57	.013	.00	.00	PIPE
10450.870	226.782	.820	227.602	13.36	11.01 / 1.88 /	229.49	.00	1.32	1.97	2.000	.000	.00	1 .0
1.635	.1128				.0263	.04	.82	2.47	.57	.013	.00	.00	PIPE
10452.500	226.966	.850	227.816	13.36	10.50 / 1.71 /	229.53	.00	1.32	1.98	2.000	.000	.00	1 .0
1.391	.1128				.0231	.03	.85	2.31	.57	.013	.00	.00	PIPE
10453.890	227.123	.881	228.004	13.36	10.01 / 1.56 /	229.56	.00	1.32	1.99	2.000	.000	.00	1 .0
1.174	.1128				.0203	.02	.88	2.15	.57	.013	.00	.00	PIPE
10455.060	227.255	.914	228.169	13.36	9.55 / 1.42 /	229.58	.00	1.32	1.99	2.000	.000	.00	1 .0
.998	.1128				.0179	.02	.91	2.01	.57	.013	.00	.00	PIPE
10456.060	227.368	.948	228.316	13.36	9.10 / 1.29 /	229.60	.00	1.32	2.00	2.000	.000	.00	1 .0
.834	.1128				.0157	.01	.95	1.87	.57	.013	.00	.00	PIPE
10456.900	227.462	.984	228.446	13.36	8.68 / 1.17 /	229.62	.00	1.32	2.00	2.000	.000	.00	1 .0
.693	.1128				.0138	.01	.98	1.74	.57	.013	.00	.00	PIPE
10457.590	227.540	1.022	228.562	13.36	8.27 / 1.06 /	229.63	.00	1.32	2.00	2.000	.000	.00	1 .0
JUNCT STR	.0833				.0151	.05	1.02	1.62		.013	.00	.00	PIPE
10460.590	227.790	.885	228.675	12.00	8.94 / 1.24 /	229.92	.00	1.24	1.99	2.000	.000	.00	1 .0
18.984	.0201				.0162	.31	.89	1.92	.85	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:33

MAPLE CANYON
SYSTEM 13A

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10479.570	228.171	.915	229.086	12.00	8.56	1.14	230.22	.00	1.24	1.99	2.000	.000	.00	1 .0
12.132	.0201					.0143	.17	.92	1.80	.85	.013	.00	.00	PIPE
10491.710	228.415	.949	229.364	12.00	8.16	1.03	230.40	.00	1.24	2.00	2.000	.000	.00	1 .0
7.790	.0201					.0126	.10	.95	1.68	.85	.013	.00	.00	PIPE
10499.500	228.571	.985	229.556	12.00	7.78	.94	230.50	.00	1.24	2.00	2.000	.000	.00	1 .0
5.302	.0201					.0111	.06	.99	1.56	.85	.013	.00	.00	PIPE
10504.800	228.677	1.023	229.700	12.00	7.42	.85	230.56	.00	1.24	2.00	2.000	.000	.00	1 .0
3.767	.0201					.0098	.04	1.02	1.45	.85	.013	.00	.00	PIPE
10508.560	228.753	1.062	229.815	12.00	7.07	.78	230.59	.00	1.24	2.00	2.000	.000	.00	1 .0
2.505	.0201					.0086	.02	1.06	1.35	.85	.013	.00	.00	PIPE
10511.070	228.803	1.104	229.907	12.00	6.75	.71	230.61	.00	1.24	1.99	2.000	.000	.00	1 .0
1.625	.0201					.0076	.01	1.10	1.26	.85	.013	.00	.00	PIPE
10512.690	228.836	1.148	229.984	12.00	6.43	.64	230.63	.00	1.24	1.98	2.000	.000	.00	1 .0
.929	.0201					.0067	.01	1.15	1.17	.85	.013	.00	.00	PIPE
10513.620	228.854	1.194	230.049	12.00	6.13	.58	230.63	.00	1.24	1.96	2.000	.000	.00	1 .0
.277	.0201					.0060	.00	1.19	1.08	.85	.013	.00	.00	PIPE
10513.900	228.860	1.244	230.104	12.00	5.84	.53	230.63	.00	1.24	1.94	2.000	.000	.00	1 .0

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Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:48

MAPLE CANYON
SYSTEM 13B

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
9.500	227.790	3.000	230.790	11.36	1.61	.04	230.83	.00	1.07	.00	3.000	.000	.00	1 .0
.000	.0201					.0003	.00	3.00	.00	.70	.013	.00	.00	PIPE
9.500	227.790	3.000	230.790	11.36	1.61	.04	230.83	.00	1.07	.00	3.000	.000	.00	1 .0
13.818	.0201					.0003	.00	3.00	.00	.70	.013	.00	.00	PIPE
23.318	228.068	2.721	230.789	11.36	1.69	.04	230.83	.00	1.07	1.74	3.000	.000	.00	1 .0
7.897	.0201					.0003	.00	2.72	.15	.70	.013	.00	.00	PIPE
31.216	228.226	2.560	230.786	11.36	1.77	.05	230.83	.00	1.07	2.12	3.000	.000	.00	1 .0
6.470	.0201					.0003	.00	2.56	.18	.70	.013	.00	.00	PIPE
37.686	228.356	2.427	230.783	11.36	1.85	.05	230.84	.00	1.07	2.36	3.000	.000	.00	1 .0
5.646	.0201					.0003	.00	2.43	.20	.70	.013	.00	.00	PIPE
43.332	228.470	2.310	230.780	11.36	1.94	.06	230.84	.00	1.07	2.52	3.000	.000	.00	1 .0
5.021	.0201					.0003	.00	2.31	.23	.70	.013	.00	.00	PIPE
48.353	228.571	2.205	230.776	11.36	2.04	.06	230.84	.00	1.07	2.65	3.000	.000	.00	1 .0
4.545	.0201					.0004	.00	2.21	.25	.70	.013	.00	.00	PIPE
52.897	228.662	2.109	230.771	11.36	2.14	.07	230.84	.00	1.07	2.74	3.000	.000	.00	1 .0
4.166	.0201					.0004	.00	2.11	.27	.70	.013	.00	.00	PIPE
57.064	228.746	2.020	230.766	11.36	2.24	.08	230.84	.00	1.07	2.81	3.000	.000	.00	1 .0
3.835	.0201					.0005	.00	2.02	.29	.70	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-28-2014 Time: 7: 1:48

MAPLE CANYON
SYSTEM 13B

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
60.899	228.823	1.937	230.760	11.36	2.35 / .09 /	230.85 /	.00 /	1.07 /	2.87 /	3.000 /	.000 /	.00 /	1 / .0
1.861	.0201				.0005	.00	1.94	.32	.70	.013	.00	.00	PIPE
62.760	228.860	1.897	230.757	11.36	2.41 / .09 /	230.85 /	.00 /	1.07 /	2.89 /	3.000 /	.000 /	.00 /	1 / .0

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:49:38

MAPLE CANYON
SYSTEM 13C

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
9.500	219.670	3.500	223.170	11.36	1.61	.04	223.21	.00	1.07	.00	3.000	.000	.00	1 .0
62.636	.0083					.0003	.02	3.50	.00	.88	.013	.00	.00	PIPE
72.136	220.188	3.000	223.188	11.36	1.61	.04	223.23	.00	1.07	.00	3.000	.000	.00	1 .0
34.223	.0083					.0003	.01	3.00	.00	.88	.013	.00	.00	PIPE
106.359	220.471	2.721	223.192	11.36	1.69	.04	223.24	.00	1.07	1.74	3.000	.000	.00	1 .0
3.471	.0083					.0003	.00	2.72	.15	.88	.013	.00	.00	PIPE
109.830	220.500	2.693	223.193	11.36	1.70	.04	223.24	.00	1.07	1.82	3.000	.000	.00	1 .0
WALL	ENTRANCE													
109.830	220.500	2.749	223.249	11.36	1.67	.04	223.29	.00	1.07	1.66	3.000	.000	.00	1 .0
1.926	.0850					.0003	.00	2.75	.15	.49	.013	.00	.00	PIPE
111.756	220.664	2.581	223.245	11.36	1.76	.05	223.29	.00	1.07	2.08	3.000	.000	.00	1 .0
1.561	.0850					.0003	.00	2.58	.18	.49	.013	.00	.00	PIPE
113.317	220.796	2.444	223.240	11.36	1.84	.05	223.29	.00	1.07	2.33	3.000	.000	.00	1 .0
.513	.0850					.0003	.00	2.44	.20	.49	.013	.00	.00	PIPE
113.830	220.840	2.399	223.239	11.36	1.87	.05	223.29	.00	1.07	2.40	3.000	.000	.00	0 .0
WALL	EXIT													
113.830	220.840	2.400	223.240	11.36	2.35	.09	223.33	.00	1.13	.98	2.500	.000	.00	1 .0
39.225	.0049					.0007	.03	2.40	.19	1.09	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:49:38

MAPLE CANYON
SYSTEM 13C

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
153.055	221.031	2.226	223.258	11.36	2.46	.09	223.35	.00	1.13	1.56	2.500	.000	.00	1 .0
16.095	.0049					.0007	.01	2.23	.25	1.09	.013	.00	.00	PIPE
169.150	221.110	2.154	223.264	11.36	2.53	.10	223.36	.00	1.13	1.73	2.500	.000	.00	1 .0

System 13A

Q =	58.27	cfs
V =	25.94	ft/sec
D =	1.065	ft
A =	2.246338	ft^2
Ye =	1.059797	ft
g =	32.2	ft/sec^2
Fr =	4.440489	
From Figure 7-2		
Ho =	11.5135	
HLoss/Ho	0.62	
HLoss =	7.138372	
Remaining Energy	4.375131	
Area Above Sill		
Height	0.5	ft
Width	16.5	ft
Area Above Sill	8.25	in
Depth of Sill	0.916667	ft
Total Depth =	1.416667	ft
Velocity	7.06303	ft/sec
TH	2.1913	OK

Figure 7-2

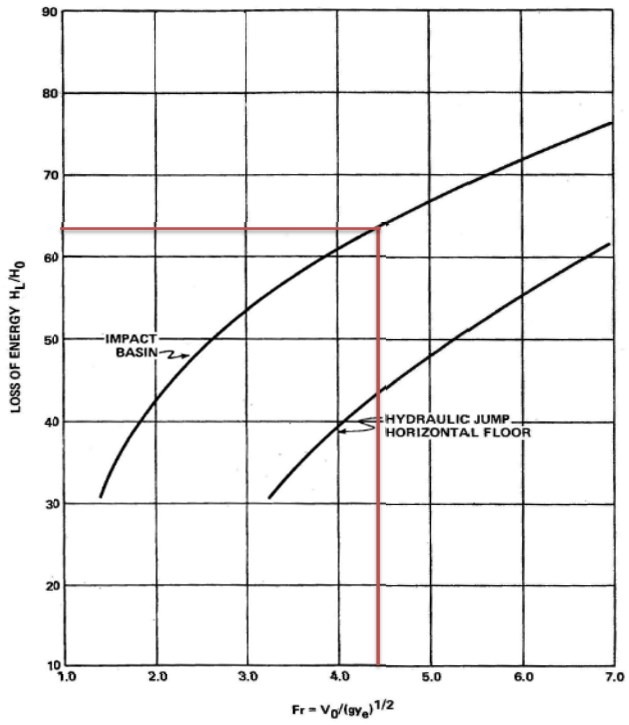


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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SYSTEM 14
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Worksheet for 14 NEW 1

Project Description

Solve For	Spread

Input Data

Discharge		7.56	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		8.33	%
Road Cross Slope		2.00	%
Curb Opening Length		11.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	19.31	ft
Depth	5.77	in
Gutter Depression	1.14	in
Total Depression	5.14	in

Worksheet for ~2015 14-1 - In Sag

Project Description

Solve For	Spread

Input Data

Discharge		7.56	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		9.40	%
Road Cross Slope		3.00	%
Curb Opening Length		18.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	9.77	ft
Depth	4.67	in
Gutter Depression	1.15	in
Total Depression	5.15	in

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:50: 6

MAPLE CANYON
SYSTEM 14

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10024.500	137.350	.312	137.662	7.56	28.45	12.57	150.23	.00	1.07	1.22	1.500	.000	.00	1 .0
43.437	.5785					.5785	25.13	.31	10.73	.31	.013	.00	.00	PIPE
10067.940	162.479	.312	162.791	7.56	28.45	12.57	175.36	.00	1.07	1.22	1.500	.000	.00	1 .0
30.680	.5785					.5432	16.66	.31	10.73	.31	.013	.00	.00	PIPE
10098.620	180.229	.321	180.550	7.56	27.18	11.47	192.02	.00	1.07	1.23	1.500	.000	.00	1 .0
10.051	.5785					.4759	4.78	.32	10.07	.31	.013	.00	.00	PIPE
10108.670	186.043	.332	186.375	7.56	25.92	10.43	196.80	.00	1.07	1.25	1.500	.000	.00	1 .0
5.769	.5785					.4163	2.40	.33	9.44	.31	.013	.00	.00	PIPE
10114.440	189.381	.344	189.725	7.56	24.71	9.48	199.21	.00	1.07	1.26	1.500	.000	.00	1 .0
3.965	.5785					.3639	1.44	.34	8.84	.31	.013	.00	.00	PIPE
10118.400	191.674	.355	192.030	7.56	23.56	8.62	200.65	.00	1.07	1.28	1.500	.000	.00	1 .0
2.960	.5785					.3182	.94	.36	8.28	.31	.013	.00	.00	PIPE
10121.360	193.387	.368	193.755	7.56	22.46	7.84	201.59	.00	1.07	1.29	1.500	.000	.00	1 .0
2.333	.5785					.2783	.65	.37	7.75	.31	.013	.00	.00	PIPE
10123.690	194.736	.380	195.116	7.56	21.42	7.12	202.24	.00	1.07	1.30	1.500	.000	.00	1 .0
1.893	.5785					.2433	.46	.38	7.26	.31	.013	.00	.00	PIPE
10125.590	195.831	.393	196.224	7.56	20.42	6.48	202.70	.00	1.07	1.32	1.500	.000	.00	1 .0
1.571	.5785					.2129	.33	.39	6.79	.31	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:50: 6

MAPLE CANYON
SYSTEM 14

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10127.160	196.740	.407	197.148	7.56	19.47	5.89	203.03	.00	1.07	1.33	1.500	.000	.00	1 .0
1.329	.5785					.1863	.25	.41	6.36	.31	.013	.00	.00	PIPE
10128.490	197.509	.421	197.930	7.56	18.56	5.35	203.28	.00	1.07	1.35	1.500	.000	.00	1 .0
1.135	.5785					.1631	.19	.42	5.95	.31	.013	.00	.00	PIPE
10129.620	198.166	.436	198.602	7.56	17.70	4.87	203.47	.00	1.07	1.36	1.500	.000	.00	1 .0
.980	.5785					.1427	.14	.44	5.57	.31	.013	.00	.00	PIPE
10130.600	198.733	.451	199.184	7.56	16.88	4.42	203.61	.00	1.07	1.38	1.500	.000	.00	1 .0
.852	.5785					.1250	.11	.45	5.21	.31	.013	.00	.00	PIPE
10131.450	199.225	.467	199.692	7.56	16.09	4.02	203.71	.00	1.07	1.39	1.500	.000	.00	1 .0
.745	.5785					.1094	.08	.47	4.88	.31	.013	.00	.00	PIPE
10132.200	199.656	.483	200.140	7.56	15.34	3.66	203.79	.00	1.07	1.40	1.500	.000	.00	1 .0
.653	.5785					.0958	.06	.48	4.56	.31	.013	.00	.00	PIPE
10132.850	200.034	.500	200.534	7.56	14.63	3.32	203.86	.00	1.07	1.41	1.500	.000	.00	1 .0
.574	.5785					.0839	.05	.50	4.26	.31	.013	.00	.00	PIPE
10133.430	200.367	.518	200.885	7.56	13.95	3.02	203.91	.00	1.07	1.43	1.500	.000	.00	1 .0
.506	.5785					.0736	.04	.52	3.99	.31	.013	.00	.00	PIPE
10133.930	200.659	.537	201.197	7.56	13.30	2.75	203.94	.00	1.07	1.44	1.500	.000	.00	1 .0
.449	.5785					.0646	.03	.54	3.73	.31	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 14

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10134.380	200.919	.556	201.475	7.56	12.68	2.50	203.97	.00	1.07	1.45	1.500	.000	.00	1 .0
.396	.5785					.0566	.02	.56	3.48	.31	.013	.00	.00	PIPE
10134.780	201.149	.576	201.725	7.56	12.09	2.27	203.99	.00	1.07	1.46	1.500	.000	.00	1 .0
.351	.5785					.0497	.02	.58	3.25	.31	.013	.00	.00	PIPE
10135.130	201.351	.597	201.948	7.56	11.53	2.06	204.01	.00	1.07	1.47	1.500	.000	.00	1 .0
.312	.5785					.0436	.01	.60	3.04	.31	.013	.00	.00	PIPE
10135.440	201.531	.618	202.149	7.56	10.99	1.88	204.03	.00	1.07	1.48	1.500	.000	.00	1 .0
.273	.5785					.0382	.01	.62	2.84	.31	.013	.00	.00	PIPE
10135.710	201.689	.641	202.330	7.56	10.48	1.71	204.04	.00	1.07	1.48	1.500	.000	.00	1 .0
.240	.5785					.0336	.01	.64	2.65	.31	.013	.00	.00	PIPE
10135.950	201.828	.665	202.494	7.56	9.99	1.55	204.04	.00	1.07	1.49	1.500	.000	.00	1 .0
.213	.5785					.0295	.01	.67	2.47	.31	.013	.00	.00	PIPE
10136.170	201.952	.689	202.641	7.56	9.53	1.41	204.05	.00	1.07	1.50	1.500	.000	.00	1 .0
.185	.5785					.0260	.00	.69	2.30	.31	.013	.00	.00	PIPE
10136.350	202.059	.715	202.774	7.56	9.08	1.28	204.05	.00	1.07	1.50	1.500	.000	.00	1 .0
.161	.5785					.0228	.00	.72	2.15	.31	.013	.00	.00	PIPE
10136.510	202.152	.742	202.894	7.56	8.66	1.16	204.06	.00	1.07	1.50	1.500	.000	.00	1 .0
.138	.5785					.0201	.00	.74	2.00	.31	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:50: 6

MAPLE CANYON
SYSTEM 14

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10136.650	202.231	.771	203.002	7.56	8.26	1.06	204.06	.00	1.07	1.50	1.500	.000	.00	1 .0
.118	.5785				.0177	.00	.77	1.86	.31	.013	.00	.00		PIPE
10136.770	202.300	.801	203.101	7.56	7.87	.96	204.06	.00	1.07	1.50	1.500	.000	.00	1 .0
.101	.5785				.0156	.00	.80	1.73	.31	.013	.00	.00		PIPE
10136.870	202.358	.832	203.190	7.56	7.51	.88	204.06	.00	1.07	1.49	1.500	.000	.00	1 .0
.082	.5785				.0138	.00	.83	1.61	.31	.013	.00	.00		PIPE
10136.950	202.405	.865	203.271	7.56	7.16	.80	204.07	.00	1.07	1.48	1.500	.000	.00	1 .0
.065	.5785				.0122	.00	.87	1.49	.31	.013	.00	.00		PIPE
10137.020	202.444	.900	203.344	7.56	6.82	.72	204.07	.00	1.07	1.47	1.500	.000	.00	1 .0
.051	.5785				.0108	.00	.90	1.39	.31	.013	.00	.00		PIPE
10137.070	202.473	.937	203.410	7.56	6.51	.66	204.07	.00	1.07	1.45	1.500	.000	.00	1 .0
.036	.5785				.0096	.00	.94	1.28	.31	.013	.00	.00		PIPE
10137.100	202.494	.976	203.470	7.56	6.20	.60	204.07	.00	1.07	1.43	1.500	.000	.00	1 .0
.021	.5785				.0085	.00	.98	1.18	.31	.013	.00	.00		PIPE
10137.120	202.506	1.018	203.525	7.56	5.92	.54	204.07	.00	1.07	1.40	1.500	.000	.00	1 .0
.006	.5785				.0076	.00	1.02	1.09	.31	.013	.00	.00		PIPE
10137.130	202.510	1.065	203.575	7.56	5.63	.49	204.07	.00	1.07	1.36	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:50: 6

MAPLE CANYON
SYSTEM 14

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
10137.130	202.510	1.824	204.334	7.56	1.04	.02	204.35	.00	.48	4.00	6.000	4.000	.00	0 .0
1.010	.0825				.0001	.00	1.82	.14	.19	.013	.00	.00		BOX
10138.140	202.593	1.739	204.332	7.56	1.09	.02	204.35	.00	.48	4.00	6.000	4.000	.00	0 .0
.960	.0825				.0001	.00	1.74	.15	.19	.013	.00	.00		BOX
10139.100	202.673	1.658	204.331	7.56	1.14	.02	204.35	.00	.48	4.00	6.000	4.000	.00	0 .0
.912	.0825				.0001	.00	1.66	.16	.19	.013	.00	.00		BOX
10140.010	202.748	1.581	204.329	7.56	1.20	.02	204.35	.00	.48	4.00	6.000	4.000	.00	0 .0
.866	.0825				.0001	.00	1.58	.17	.19	.013	.00	.00		BOX
10140.880	202.819	1.507	204.327	7.56	1.25	.02	204.35	.00	.48	4.00	6.000	4.000	.00	0 .0
.252	.0825				.0002	.00	1.51	.18	.19	.013	.00	.00		BOX
10141.130	202.840	1.486	204.326	7.56	1.27	.03	204.35	.00	.48	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10141.130	202.840	1.487	204.327	7.56	4.28	.28	204.61	.00	1.07	.28	1.500	.000	.00	1 .0
5.544	.0201				.0047	.03	1.49	.30	.76	.013	.00	.00		PIPE
10146.670	202.951	1.358	204.310	7.56	4.49	.31	204.62	.00	1.07	.88	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
10146.670	202.951	.801	203.753	7.56	7.87	.96	204.72	.00	1.07	1.50	1.500	.000	.00	1 .0
8.773	.0201				.0156	.14	.80	1.73	.76	.013	.00	.00		PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date:10-29-2014 Time:12:50: 6

MAPLE CANYON
SYSTEM 14

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10155.450	203.128	.832	203.960	7.56	7.51	.88	204.83	.00	1.07	1.49	1.500	.000	.00	1 .0
7.393	.0201					.0138	.10	.83	1.61	.76	.013	.00	.00	PIPE
10162.840	203.276	.865	204.141	7.56	7.16	.80	204.94	.00	1.07	1.48	1.500	.000	.00	1 .0
4.725	.0201					.0122	.06	.87	1.49	.76	.013	.00	.00	PIPE
10167.560	203.371	.900	204.271	7.56	6.82	.72	204.99	.00	1.07	1.47	1.500	.000	.00	1 .0
3.091	.0201					.0108	.03	.90	1.39	.76	.013	.00	.00	PIPE
10170.660	203.433	.937	204.371	7.56	6.51	.66	205.03	.00	1.07	1.45	1.500	.000	.00	1 .0
1.973	.0201					.0096	.02	.94	1.28	.76	.013	.00	.00	PIPE
10172.630	203.473	.976	204.449	7.56	6.20	.60	205.05	.00	1.07	1.43	1.500	.000	.00	1 .0
1.063	.0201					.0085	.01	.98	1.18	.76	.013	.00	.00	PIPE
10173.690	203.494	1.018	204.513	7.56	5.92	.54	205.06	.00	1.07	1.40	1.500	.000	.00	1 .0
.278	.0201					.0076	.00	1.02	1.09	.76	.013	.00	.00	PIPE
10173.970	203.500	1.065	204.565	7.56	5.63	.49	205.06	.00	1.07	1.36	1.500	.000	.00	1 .0

SYSTEM 15
(ALBATROSS & MAPLE)

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Worksheet for 15 Existing

Project Description

Solve For	Spread

Input Data

Discharge		35.73	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		6.25	%
Road Cross Slope		2.00	%
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Width		2.00	ft
Grate Length		3.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		10.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread		43.33	ft
Depth		11.42	in
Gutter Depression		1.02	in
Total Depression		5.02	in
Open Grate Area		2.70	ft²
Active Grate Weir Length		5.00	ft

Worksheet for ~2015 15.1 - On grade

Project Description

Solve For	Efficiency

Input Data

Discharge	20.00	ft³/s
Slope	0.50	%
Gutter Width	1.50	ft
Gutter Cross Slope	9.40	%
Road Cross Slope	4.00	%
Roughness Coefficient	0.015	
Curb Opening Length	20.00	ft
Local Depression	4.00	in
Local Depression Width	1.50	ft

Results

Efficiency	99.99	%
Intercepted Flow	20.00	ft³/s
Bypass Flow	0.00	ft³/s
Spread	15.83	ft
Depth	8.57	in
Flow Area	5.07	ft²
Gutter Depression	0.97	in
Total Depression	4.97	in
Velocity	3.94	ft/s
Equivalent Cross Slope	11.00	%
Length Factor	0.99	
Total Interception Length	20.13	ft

Worksheet for ~2015 15.2 - In Sag

Project Description

Solve For	Spread

Input Data

Discharge		15.73	ft³/s
Gutter Width		1.50	ft
Gutter Cross Slope		9.40	%
Road Cross Slope		4.00	%
Curb Opening Length		15.00	ft
Opening Height		6.00	in
Curb Throat Type	Horizontal		
Local Depression		4.00	in
Local Depression Width		1.50	ft
Throat Incline Angle		90.00	degrees

Results

Spread	13.26	ft
Depth	7.34	in
Gutter Depression	0.97	in
Total Depression	4.97	in

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MAPLE CANYON
SYSTEM 15

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10036.000	108.460	3.000	111.460	35.73	5.05	.40	111.86	.00	1.94	.00	3.000	.000	.00	1 .0
.000	.0369					.0028	.00	3.00	.00	1.08	.013	.00	.00	PIPE
10036.000	108.460	3.000	111.460	35.73	5.05	.40	111.86	.00	1.94	.00	3.000	.000	.00	1 .0
6.956	.0369					.0027	.02	3.00	.00	1.08	.013	.00	.00	PIPE
10042.960	108.717	2.721	111.438	35.73	5.30	.44	111.87	.00	1.94	1.74	3.000	.000	.00	1 .0
3.420	.0369					.0026	.01	2.72	.48	1.08	.013	.00	.00	PIPE
10046.380	108.843	2.560	111.403	35.73	5.56	.48	111.88	.00	1.94	2.12	3.000	.000	.00	1 .0
2.492	.0369					.0028	.01	2.56	.56	1.08	.013	.00	.00	PIPE
10048.870	108.935	2.427	111.362	35.73	5.83	.53	111.89	.00	1.94	2.36	3.000	.000	.00	1 .0
.301	.0369					.0030	.00	2.43	.64	1.08	.013	.00	.00	PIPE
10049.170	108.946	2.410	111.356	35.73	5.87	.54	111.89	.00	1.94	2.39	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
10049.170	108.946	1.546	110.493	35.73	9.73	1.47	111.96	.00	1.94	3.00	3.000	.000	.00	1 .0
1.956	.0369					.0099	.02	1.55	1.55	1.08	.013	.00	.00	PIPE
10051.130	109.018	1.593	110.611	35.73	9.37	1.36	111.97	.00	1.94	2.99	3.000	.000	.00	1 .0
2.201	.0369					.0088	.02	1.59	1.46	1.08	.013	.00	.00	PIPE
10053.330	109.100	1.655	110.755	35.73	8.93	1.24	111.99	.00	1.94	2.98	3.000	.000	.00	1 .0
1.599	.0369					.0078	.01	1.66	1.36	1.08	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10054.920	109.159	1.721	110.880	35.73	8.51	1.13	112.01	.00	1.94	2.97	3.000	.000	.00	1 .0
1.110	.0369					.0069	.01	1.72	1.26	1.08	.013	.00	.00	PIPE
10056.040	109.200	1.790	110.990	35.73	8.12	1.02	112.01	.00	1.94	2.94	3.000	.000	.00	1 .0
.617	.0369					.0061	.00	1.79	1.17	1.08	.013	.00	.00	PIPE
10056.650	109.222	1.864	111.086	35.73	7.74	.93	112.02	.00	1.94	2.91	3.000	.000	.00	1 .0
.208	.0369					.0054	.00	1.86	1.08	1.08	.013	.00	.00	PIPE
10056.860	109.230	1.943	111.173	35.73	7.38	.84	112.02	.00	1.94	2.87	3.000	.000	.00	1 .0
WALL	ENTRANCE													
10056.860	109.230	2.957	112.187	35.73	3.02	.14	112.33	.00	1.35	4.00	6.000	4.000	.00	0 .0
10056.860	109.230	.303	109.533	35.73	29.47	13.48	123.02	.00	1.35	4.00	6.000	4.000	.00	0 .0
.096	.0850					.3947	.04	.30	9.43	.50	.013	.00	.00	BOX
10056.960	109.238	.303	109.541	35.73	29.50	13.52	123.06	.00	1.35	4.00	6.000	4.000	.00	0 .0
3.904	.0850					.4276	1.67	.30	9.45	.50	.013	.00	.00	BOX
10060.860	109.570	.289	109.859	35.73	30.94	14.87	124.73	.00	1.35	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10060.860	109.570	.662	110.232	35.73	30.84	14.77	125.00	.00	1.94	2.49	3.000	.000	.00	1 .0
11.680	.3475					.2354	2.75	.66	7.97	.61	.013	.00	.00	PIPE

10072.540	113.628	.684	114.312	35.73	29.39	13.42	127.73	.00	1.94	2.52	3.000	.000	.00	1 .0
8.428	.3475					.2056	1.73	.68	7.45	.61	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 15

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10080.970	116.557	.708	117.265	35.73	28.03	12.20	129.46	.00	1.94	2.55	3.000	.000	.00	1 .0
6.470	.3475					.1798	1.16	.71	6.98	.61	.013	.00	.00	PIPE
10087.440	118.805	.732	119.537	35.73	26.72	11.09	130.63	.00	1.94	2.58	3.000	.000	.00	1 .0
5.167	.3475					.1572	.81	.73	6.54	.61	.013	.00	.00	PIPE
10092.610	120.600	.757	121.357	35.73	25.48	10.08	131.44	.00	1.94	2.61	3.000	.000	.00	1 .0
4.240	.3475					.1375	.58	.76	6.12	.61	.013	.00	.00	PIPE
10096.850	122.073	.783	122.856	35.73	24.29	9.16	132.02	.00	1.94	2.64	3.000	.000	.00	1 .0
3.544	.3475					.1203	.43	.78	5.73	.61	.013	.00	.00	PIPE
10100.390	123.304	.811	124.116	35.73	23.16	8.33	132.45	.00	1.94	2.66	3.000	.000	.00	1 .0
3.012	.3475					.1053	.32	.81	5.37	.61	.013	.00	.00	PIPE
10103.400	124.351	.839	125.190	35.73	22.08	7.57	132.76	.00	1.94	2.69	3.000	.000	.00	1 .0
2.583	.3475					.0921	.24	.84	5.02	.61	.013	.00	.00	PIPE
10105.980	125.248	.868	126.117	35.73	21.06	6.89	133.00	.00	1.94	2.72	3.000	.000	.00	1 .0
2.233	.3475					.0806	.18	.87	4.70	.61	.013	.00	.00	PIPE
10108.220	126.024	.898	126.922	35.73	20.08	6.26	133.18	.00	1.94	2.75	3.000	.000	.00	1 .0
1.939	.3475					.0706	.14	.90	4.40	.61	.013	.00	.00	PIPE

10110.160	126.698	.930	127.628	35.73	19.14	5.69	133.32	.00	1.94	2.78	3.000	.000	.00	1	.0
1.699	.3475					.0618	.11	.93	4.11	.61	.013	.00	.00	PIPE	

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10111.860	127.289	.962	128.251	35.73	18.25	5.17	133.42	.00	1.94	2.80	3.000	.000	.00	1	.0
1.487	.3475					.0541	.08	.96	3.85	.61	.013	.00	.00	PIPE	
10113.340	127.805	.996	128.801	35.73	17.40	4.70	133.50	.00	1.94	2.83	3.000	.000	.00	1	.0
1.309	.3475					.0474	.06	1.00	3.60	.61	.013	.00	.00	PIPE	
10114.650	128.260	1.031	129.291	35.73	16.59	4.28	133.57	.00	1.94	2.85	3.000	.000	.00	1	.0
1.149	.3475					.0416	.05	1.03	3.36	.61	.013	.00	.00	PIPE	
10115.800	128.659	1.068	129.727	35.73	15.82	3.89	133.61	.00	1.94	2.87	3.000	.000	.00	1	.0
1.014	.3475					.0364	.04	1.07	3.14	.61	.013	.00	.00	PIPE	
10116.820	129.012	1.106	130.118	35.73	15.08	3.53	133.65	.00	1.94	2.89	3.000	.000	.00	1	.0
.892	.3475					.0319	.03	1.11	2.94	.61	.013	.00	.00	PIPE	
10117.710	129.321	1.146	130.467	35.73	14.38	3.21	133.68	.00	1.94	2.92	3.000	.000	.00	1	.0
.782	.3475					.0280	.02	1.15	2.75	.61	.013	.00	.00	PIPE	
10118.490	129.593	1.188	130.781	35.73	13.71	2.92	133.70	.00	1.94	2.93	3.000	.000	.00	1	.0
.689	.3475					.0246	.02	1.19	2.56	.61	.013	.00	.00	PIPE	
10119.180	129.833	1.231	131.064	35.73	13.07	2.65	133.72	.00	1.94	2.95	3.000	.000	.00	1	.0
.603	.3475					.0216	.01	1.23	2.39	.61	.013	.00	.00	PIPE	

10119.780	130.042	1.276	131.318	35.73	12.47	2.41	133.73	.00	1.94	2.97	3.000	.000	.00	1 .0
.524	.3475					.0190	.01	1.28	2.23	.61	.013	.00	.00	PIPE

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10120.310	130.224	1.323	131.547	35.73	11.89	2.19	133.74	.00	1.94	2.98	3.000	.000	.00	1 .0
.455	.3475					.0167	.01	1.32	2.09	.61	.013	.00	.00	PIPE
10120.760	130.382	1.372	131.754	35.73	11.33	1.99	133.75	.00	1.94	2.99	3.000	.000	.00	1 .0
.389	.3475					.0147	.01	1.37	1.94	.61	.013	.00	.00	PIPE
10121.150	130.517	1.424	131.941	35.73	10.81	1.81	133.75	.00	1.94	3.00	3.000	.000	.00	1 .0
.334	.3475					.0129	.00	1.42	1.81	.61	.013	.00	.00	PIPE
10121.480	130.633	1.477	132.110	35.73	10.30	1.65	133.76	.00	1.94	3.00	3.000	.000	.00	1 .0
.276	.3475					.0114	.00	1.48	1.69	.61	.013	.00	.00	PIPE
10121.760	130.729	1.534	132.263	35.73	9.82	1.50	133.76	.00	1.94	3.00	3.000	.000	.00	1 .0
.229	.3475					.0100	.00	1.53	1.57	.61	.013	.00	.00	PIPE
10121.990	130.809	1.593	132.402	35.73	9.37	1.36	133.76	.00	1.94	2.99	3.000	.000	.00	1 .0
.183	.3475					.0088	.00	1.59	1.46	.61	.013	.00	.00	PIPE
10122.170	130.872	1.655	132.527	35.73	8.93	1.24	133.77	.00	1.94	2.98	3.000	.000	.00	1 .0
.137	.3475					.0078	.00	1.66	1.36	.61	.013	.00	.00	PIPE
10122.310	130.920	1.721	132.641	35.73	8.51	1.13	133.77	.00	1.94	2.97	3.000	.000	.00	1 .0
.098	.3475					.0069	.00	1.72	1.26	.61	.013	.00	.00	PIPE

10122.410	130.954	1.790	132.744	35.73	8.12	1.02	133.77	.00	1.94	2.94	3.000	.000	.00	1 .0
.056	.3475					.0061	.00	1.79	1.17	.61	.013	.00	.00	PIPE

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 5- 8-2015 Time: 2: 0:31

MAPLE CANYON
SYSTEM 15

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10122.460	130.973	1.864	132.837	35.73	7.74	.93	133.77	.00	1.94	2.91	3.000	.000	.00	1 .0
.020	.3475					.0054	.00	1.86	1.08	.61	.013	.00	.00	PIPE
10122.480	130.980	1.943	132.923	35.73	7.38	.84	133.77	.00	1.94	2.87	3.000	.000	.00	1 .0
WALL	ENTRANCE													
10122.480	130.980	2.957	133.937	35.73	3.02	.14	134.08	.00	1.35	4.00	6.000	4.000	.00	0 .0
10122.480	130.980	.328	131.308	35.73	27.23	11.51	142.82	.00	1.35	4.00	6.000	4.000	.00	0 .0
4.000	.0825					.3286	1.31	.33	8.38	.50	.013	.00	.00	BOX
10126.480	131.310	.315	131.625	35.73	28.39	12.51	144.14	.00	1.35	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
10126.480	131.310	.705	132.015	35.73	28.20	12.35	144.36	.00	1.94	2.54	3.000	.000	.00	1 .0
.732	.3767					.1935	.14	.71	7.04	.60	.013	.00	.00	PIPE
10127.210	131.586	.708	132.294	35.73	28.03	12.20	144.49	.00	1.94	2.55	3.000	.000	.00	1 .0
5.510	.3767					.1798	.99	.71	6.98	.60	.013	.00	.00	PIPE
10132.720	133.662	.732	134.394	35.73	26.72	11.09	145.48	.00	1.94	2.58	3.000	.000	.00	1 .0
4.479	.3767					.1572	.70	.73	6.54	.60	.013	.00	.00	PIPE
10137.200	135.349	.757	136.106	35.73	25.48	10.08	146.19	.00	1.94	2.61	3.000	.000	.00	1 .0

3.723	.3767					.1375	.51	.76	6.12	.60	.013	.00	.00	PIPE		
10140.920	136.751	.783	137.534	35.73	24.29	9.16	146.70	.00	1.94	2.64	3.000	.000	.00	1	.0	
3.141	.3767					.1203	.38	.78	5.73	.60	.013	.00	.00	PIPE		

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 5- 8-2015 Time: 2: 0:31

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10144.070	137.933	.811	138.745	35.73	23.16	8.33	147.08	.00	1.94	2.66	3.000	.000	.00	1	.0	
2.688	.3767					.1053	.28	.81	5.37	.60	.013	.00	.00	PIPE		
10146.750	138.946	.839	139.785	35.73	22.08	7.57	147.36	.00	1.94	2.69	3.000	.000	.00	1	.0	
2.317	.3767					.0921	.21	.84	5.02	.60	.013	.00	.00	PIPE		
10149.070	139.819	.868	140.687	35.73	21.06	6.89	147.57	.00	1.94	2.72	3.000	.000	.00	1	.0	
2.013	.3767					.0806	.16	.87	4.70	.60	.013	.00	.00	PIPE		
10151.080	140.577	.898	141.475	35.73	20.08	6.26	147.73	.00	1.94	2.75	3.000	.000	.00	1	.0	
1.755	.3767					.0706	.12	.90	4.40	.60	.013	.00	.00	PIPE		
10152.840	141.238	.930	142.168	35.73	19.14	5.69	147.86	.00	1.94	2.78	3.000	.000	.00	1	.0	
1.541	.3767					.0618	.10	.93	4.11	.60	.013	.00	.00	PIPE		
10154.380	141.818	.962	142.781	35.73	18.25	5.17	147.95	.00	1.94	2.80	3.000	.000	.00	1	.0	
1.353	.3767					.0541	.07	.96	3.85	.60	.013	.00	.00	PIPE		
10155.730	142.328	.996	143.324	35.73	17.40	4.70	148.03	.00	1.94	2.83	3.000	.000	.00	1	.0	
1.192	.3767					.0474	.06	1.00	3.60	.60	.013	.00	.00	PIPE		
10156.920	142.777	1.031	143.808	35.73	16.59	4.28	148.08	.00	1.94	2.85	3.000	.000	.00	1	.0	

1.050	.3767					.0416	.04	1.03	3.36	.60	.013	.00	.00	PIPE	
10157.970	143.172	1.068	144.240	35.73	15.82	3.89	148.13	.00	1.94	2.87	3.000	.000	.00	1	.0
.927	.3767					.0364	.03	1.07	3.14	.60	.013	.00	.00	PIPE	

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MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10158.900	143.521	1.106	144.627	35.73	15.08	3.53	148.16	.00	1.94	2.89	3.000	.000	.00	1	.0
.815	.3767					.0319	.03	1.11	2.94	.60	.013	.00	.00	PIPE	
10159.720	143.829	1.146	144.975	35.73	14.38	3.21	148.19	.00	1.94	2.92	3.000	.000	.00	1	.0
.717	.3767					.0280	.02	1.15	2.75	.60	.013	.00	.00	PIPE	
10160.430	144.099	1.188	145.287	35.73	13.71	2.92	148.21	.00	1.94	2.93	3.000	.000	.00	1	.0
.632	.3767					.0246	.02	1.19	2.56	.60	.013	.00	.00	PIPE	
10161.060	144.337	1.231	145.568	35.73	13.07	2.65	148.22	.00	1.94	2.95	3.000	.000	.00	1	.0
.553	.3767					.0216	.01	1.23	2.39	.60	.013	.00	.00	PIPE	
10161.620	144.545	1.276	145.821	35.73	12.47	2.41	148.23	.00	1.94	2.97	3.000	.000	.00	1	.0
.481	.3767					.0190	.01	1.28	2.23	.60	.013	.00	.00	PIPE	
10162.100	144.726	1.323	146.049	35.73	11.89	2.19	148.24	.00	1.94	2.98	3.000	.000	.00	1	.0
.418	.3767					.0167	.01	1.32	2.09	.60	.013	.00	.00	PIPE	
10162.520	144.884	1.372	146.256	35.73	11.33	1.99	148.25	.00	1.94	2.99	3.000	.000	.00	1	.0
.357	.3767					.0147	.01	1.37	1.94	.60	.013	.00	.00	PIPE	
10162.870	145.018	1.424	146.442	35.73	10.81	1.81	148.26	.00	1.94	3.00	3.000	.000	.00	1	.0

.308	.3767				.0129	.00	1.42	1.81	.60	.013	.00	.00	PIPE		
10163.180	145.134	1.477	146.611	35.73	10.30	1.65	148.26	.00	1.94	3.00	3.000	.000	.00	1	.0
.254	.3767				.0114	.00	1.48	1.69	.60	.013	.00	.00	PIPE		

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MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10163.440	145.230	1.534	146.764	35.73	9.82	1.50	148.26	.00	1.94	3.00	3.000	.000	.00	1	.0
.211	.3767				.0100	.00	1.53	1.57	.60	.013	.00	.00	PIPE		
10163.650	145.309	1.593	146.902	35.73	9.37	1.36	148.26	.00	1.94	2.99	3.000	.000	.00	1	.0
.168	.3767				.0088	.00	1.59	1.46	.60	.013	.00	.00	PIPE		
10163.810	145.372	1.655	147.028	35.73	8.93	1.24	148.27	.00	1.94	2.98	3.000	.000	.00	1	.0
.126	.3767				.0078	.00	1.66	1.36	.60	.013	.00	.00	PIPE		
10163.940	145.420	1.721	147.141	35.73	8.51	1.13	148.27	.00	1.94	2.97	3.000	.000	.00	1	.0
.090	.3767				.0069	.00	1.72	1.26	.60	.013	.00	.00	PIPE		
10164.030	145.454	1.790	147.244	35.73	8.12	1.02	148.27	.00	1.94	2.94	3.000	.000	.00	1	.0
.052	.3767				.0061	.00	1.79	1.17	.60	.013	.00	.00	PIPE		
10164.080	145.473	1.864	147.337	35.73	7.74	.93	148.27	.00	1.94	2.91	3.000	.000	.00	1	.0
.018	.3767				.0054	.00	1.86	1.08	.60	.013	.00	.00	PIPE		
10164.100	145.480	1.943	147.423	35.73	7.38	.84	148.27	.00	1.94	2.87	3.000	.000	.00	1	.0
WALL	ENTRANCE														
10164.100	145.480	2.957	148.437	35.73	3.02	.14	148.58	.00	1.35	4.00	6.000	4.000	.00	0	.0

10164.100	145.480	.263	145.743	35.73	33.96	17.90	163.65	.00	1.35	4.00	6.000	4.000	.00	0	.0
1.042	.0825					.6341	.66	.26	11.67	.50	.013	.00	.00	BOX	
10165.140	145.566	.259	145.825	35.73	34.53	18.51	164.34	.00	1.35	4.00	6.000	4.000	.00	0	.0
2.958	.0825					.7043	2.08	.26	11.96	.50	.013	.00	.00	BOX	

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MAPLE CANYON
SYSTEM 15

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
10168.100	145.810	.247	146.057	35.73	36.21	20.36	166.42	.00	1.35	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
10168.100	145.810	.592	146.402	35.73	36.16	20.31	166.71	.00	1.94	2.39	3.000	.000	.00	1 .0
2.838	.6144					.3852	1.09	.59	9.91	.53	.013	.00	.00	PIPE
10170.940	147.553	.599	148.152	35.73	35.57	19.64	167.80	.00	1.94	2.40	3.000	.000	.00	1 .0
6.739	.6144					.3523	2.37	.60	9.69	.53	.013	.00	.00	PIPE
10177.680	151.693	.619	152.313	35.73	33.91	17.86	170.17	.00	1.94	2.43	3.000	.000	.00	1 .0
5.228	.6144					.3078	1.61	.62	9.07	.53	.013	.00	.00	PIPE
10182.900	154.905	.640	155.545	35.73	32.33	16.23	171.78	.00	1.94	2.46	3.000	.000	.00	1 .0
4.211	.6144					.2691	1.13	.64	8.50	.53	.013	.00	.00	PIPE
10187.120	157.492	.662	158.154	35.73	30.83	14.76	172.91	.00	1.94	2.49	3.000	.000	.00	1 .0
3.480	.6144					.2352	.82	.66	7.96	.53	.013	.00	.00	PIPE
10190.600	159.630	.684	160.314	35.73	29.39	13.42	173.73	.00	1.94	2.52	3.000	.000	.00	1 .0

	2.925	.6144					.2056	.60	.68	7.45	.53	.013	.00	.00	PIPE		
10193.520	161.427	.708	162.135	35.73	28.03	12.20	174.33	.00	1.94	2.55	3.000	.000	.00	1	.0		
	2.496	.6144					.1798	.45	.71	6.98	.53	.013	.00	.00	PIPE		
10196.020	162.961	.732	163.693	35.73	26.72	11.09	174.78	.00	1.94	2.58	3.000	.000	.00	1	.0		
	2.150	.6144					.1572	.34	.73	6.54	.53	.013	.00	.00	PIPE		

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MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
	1.867	.6144				.1375	.26	.76	6.12	.53	.013	.00	.00	PIPE
10200.030	165.429	.783	166.212	35.73	24.29	9.16	175.38	.00	1.94	2.64	3.000	.000	.00	1 .0
	1.630	.6144				.1203	.20	.78	5.73	.53	.013	.00	.00	PIPE
10201.660	166.430	.811	167.241	35.73	23.16	8.33	175.57	.00	1.94	2.66	3.000	.000	.00	1 .0
	1.433	.6144				.1053	.15	.81	5.37	.53	.013	.00	.00	PIPE
10203.100	167.310	.839	168.149	35.73	22.08	7.57	175.72	.00	1.94	2.69	3.000	.000	.00	1 .0
	1.263	.6144				.0921	.12	.84	5.02	.53	.013	.00	.00	PIPE
10204.360	168.086	.868	168.954	35.73	21.06	6.89	175.84	.00	1.94	2.72	3.000	.000	.00	1 .0
	1.116	.6144				.0806	.09	.87	4.70	.53	.013	.00	.00	PIPE
10205.480	168.772	.898	169.670	35.73	20.08	6.26	175.93	.00	1.94	2.75	3.000	.000	.00	1 .0
	.987	.6144				.0706	.07	.90	4.40	.53	.013	.00	.00	PIPE
10206.460	169.379	.930	170.309	35.73	19.14	5.69	176.00	.00	1.94	2.78	3.000	.000	.00	1 .0

	.878	.6144					.0618	.05	.93	4.11	.53	.013	.00	.00	PIPE
10207.340	169.918	.962	170.880	35.73	18.25	5.17	176.05	.00	1.94	2.80	3.000	.000	.00	1	.0
	.778	.6144					.0541	.04	.96	3.85	.53	.013	.00	.00	PIPE
10208.120	170.397	.996	171.393	35.73	17.40	4.70	176.10	.00	1.94	2.83	3.000	.000	.00	1	.0
	.692	.6144					.0474	.03	1.00	3.60	.53	.013	.00	.00	PIPE

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MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10208.810	170.822	1.031	171.853	35.73	16.59	4.28	176.13	.00	1.94	2.85	3.000	.000	.00	1	.0
	.614	.6144				.0416	.03	1.03	3.36	.53	.013	.00	.00	PIPE	
10209.430	171.199	1.068	172.267	35.73	15.82	3.89	176.15	.00	1.94	2.87	3.000	.000	.00	1	.0
	.546	.6144				.0364	.02	1.07	3.14	.53	.013	.00	.00	PIPE	
10209.970	171.534	1.106	172.641	35.73	15.08	3.53	176.17	.00	1.94	2.89	3.000	.000	.00	1	.0
	.482	.6144				.0319	.02	1.11	2.94	.53	.013	.00	.00	PIPE	
10210.450	171.831	1.146	172.977	35.73	14.38	3.21	176.19	.00	1.94	2.92	3.000	.000	.00	1	.0
	.427	.6144				.0280	.01	1.15	2.75	.53	.013	.00	.00	PIPE	
10210.880	172.093	1.188	173.281	35.73	13.71	2.92	176.20	.00	1.94	2.93	3.000	.000	.00	1	.0
	.377	.6144				.0246	.01	1.19	2.56	.53	.013	.00	.00	PIPE	
10211.260	172.325	1.231	173.556	35.73	13.07	2.65	176.21	.00	1.94	2.95	3.000	.000	.00	1	.0
	.331	.6144				.0216	.01	1.23	2.39	.53	.013	.00	.00	PIPE	
10211.590	172.528	1.276	173.804	35.73	12.47	2.41	176.22	.00	1.94	2.97	3.000	.000	.00	1	.0

	.289	.6144					.0190	.01	1.28	2.23	.53	.013	.00	.00	PIPE	
10211.880	172.706	1.323	174.029	35.73	11.89	2.19	176.22	.00	1.94	2.98	3.000	.000	.00	1	.0	
	.252	.6144					.0167	.00	1.32	2.09	.53	.013	.00	.00	PIPE	
10212.130	172.861	1.372	174.233	35.73	11.33	1.99	176.23	.00	1.94	2.99	3.000	.000	.00	1	.0	
	.216	.6144					.0147	.00	1.37	1.94	.53	.013	.00	.00	PIPE	

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10212.350	172.993	1.424	174.417	35.73	10.81	1.81	176.23	.00	1.94	3.00	3.000	.000	.00	1	.0	
	.186	.6144				.0129	.00	1.42	1.81	.53	.013	.00	.00	PIPE		
10212.530	173.107	1.477	174.585	35.73	10.30	1.65	176.23	.00	1.94	3.00	3.000	.000	.00	1	.0	
	.154	.6144				.0114	.00	1.48	1.69	.53	.013	.00	.00	PIPE		
10212.690	173.202	1.534	174.736	35.73	9.82	1.50	176.23	.00	1.94	3.00	3.000	.000	.00	1	.0	
	.128	.6144				.0100	.00	1.53	1.57	.53	.013	.00	.00	PIPE		
10212.810	173.281	1.593	174.874	35.73	9.37	1.36	176.24	.00	1.94	2.99	3.000	.000	.00	1	.0	
	.103	.6144				.0088	.00	1.59	1.46	.53	.013	.00	.00	PIPE		
10212.920	173.343	1.655	174.998	35.73	8.93	1.24	176.24	.00	1.94	2.98	3.000	.000	.00	1	.0	
	.077	.6144				.0078	.00	1.66	1.36	.53	.013	.00	.00	PIPE		
10212.990	173.390	1.721	175.112	35.73	8.51	1.13	176.24	.00	1.94	2.97	3.000	.000	.00	1	.0	
	.055	.6144				.0069	.00	1.72	1.26	.53	.013	.00	.00	PIPE		
10213.050	173.424	1.790	175.214	35.73	8.12	1.02	176.24	.00	1.94	2.94	3.000	.000	.00	1	.0	

	.031	.6144					.0061	.00	1.79	1.17	.53	.013	.00	.00	PIPE		
10213.080	173.443	1.864	175.307	35.73	7.74	.93	176.24	.00	1.94	2.91	3.000	.000	.00	1	.0		
	.011	.6144					.0054	.00	1.86	1.08	.53	.013	.00	.00	PIPE		
10213.090	173.450	1.943	175.393	35.73	7.38	.84	176.24	.00	1.94	2.87	3.000	.000	.00	1	.0		
WALL	ENTRANCE																

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 5- 8-2015 Time: 2: 0:31

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10213.090	173.450	2.957	176.407	35.73	3.02	.14	176.55	.00	1.35	4.00	6.000	4.000	.00	0	.0
	1.507	.0825				.0006	.00	2.96	.31	.50	.013	.00	.00	BOX	
10214.600	173.574	2.820	176.394	35.73	3.17	.16	176.55	.00	1.35	4.00	6.000	4.000	.00	0	.0
	1.413	.0825				.0007	.00	2.82	.33	.50	.013	.00	.00	BOX	
10216.010	173.691	2.688	176.379	35.73	3.32	.17	176.55	.00	1.35	4.00	6.000	4.000	.00	0	.0
	1.080	.0825				.0007	.00	2.69	.36	.50	.013	.00	.00	BOX	
10217.090	173.780	2.586	176.366	35.73	3.45	.19	176.55	.00	1.35	4.00	6.000	4.000	.00	0	.0
WALL	EXIT														
10217.090	173.780	2.587	176.367	35.73	5.51	.47	176.84	.00	1.94	2.07	3.000	.000	.00	1	.0
	5.196	.0202				.0028	.01	2.59	.55	1.28	.013	.00	.00	PIPE	
10222.290	173.885	2.449	176.334	35.73	5.78	.52	176.85	.00	1.94	2.32	3.000	.000	.00	1	.0
	3.898	.0202				.0030	.01	2.45	.62	1.28	.013	.00	.00	PIPE	
10226.180	173.964	2.330	176.294	35.73	6.06	.57	176.87	.00	1.94	2.50	3.000	.000	.00	1	.0

	2.956	.0202					.0034	.01	2.33	.70	1.28	.013	.00	.00	PIPE
10229.140	174.024	2.223	176.247	35.73	6.36	.63	176.88	.00	1.94	2.63	3.000	.000	.00	1	.0
	1.504	.0202					.0037	.01	2.22	.77	1.28	.013	.00	.00	PIPE
10230.640	174.054	2.156	176.211	35.73	6.57	.67	176.88	.00	1.94	2.70	3.000	.000	.00	1	.0

HYDRAULIC JUMP

Program Package Serial Number: 1553

WATER SURFACE PROFILE LISTING Date: 5- 8-2015 Time: 2: 0:31

MAPLE CANYON
SYSTEM 15

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10230.640	174.054	1.742	175.797	35.73	8.39	1.09	176.89	.00	1.94	2.96	3.000	.000	.00	1	.0
	1.449	.0202				.0067	.01	1.74	1.23	1.28	.013	.00	.00	PIPE	
10232.090	174.084	1.790	175.874	35.73	8.12	1.02	176.90	.00	1.94	2.94	3.000	.000	.00	1	.0
	1.345	.0202				.0061	.01	1.79	1.17	1.28	.013	.00	.00	PIPE	
10233.440	174.111	1.864	175.975	35.73	7.74	.93	176.91	.00	1.94	2.91	3.000	.000	.00	1	.0
	.441	.0202				.0054	.00	1.86	1.08	1.28	.013	.00	.00	PIPE	
10233.880	174.120	1.943	176.063	35.73	7.38	.84	176.91	.00	1.94	2.87	3.000	.000	.00	1	.0
WALL	ENTRANCE														
10233.880	174.120	2.957	177.077	35.73	3.02	.14	177.22	.00	1.35	4.00	6.000	4.000	.00	0	.0
JUNCT STR	.0825					.0004	.00	2.96	.31		.013	.00	.00	BOX	
10237.880	174.450	2.823	177.273	20.00	1.77	.05	177.32	.00	.92	4.00	6.000	4.000	.00	0	.0

♀

Maple Canyon
System 15 - 2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
20038.710	174.620	2.653	177.273	20.00	3.02 / .14 / .0008	177.42 / .01	.00 / 2.65	1.44 / .29	1.92 / .93	3.000 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
6.871	.0203													
20045.580	174.759	2.505	177.265	20.00	3.17 / .16 / .0009	177.42 / .00	.00 / 2.51	1.44 / .33	2.23 / .93	3.000 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
.027	.0203													
20045.610	174.760	2.505	177.265	20.00	3.17 / .16 / .0009	177.42 / .00	.00 / 2.51	1.44 / .33	2.23 / .93	3.000 / .013	.000 / .00	.00 / .00	1 / PIPE	.0
WALL	ENTRANCE													
20045.610	174.760	2.699	177.459	20.00	1.85 / .05 / .0002	177.51 / .00	.00 / 2.70	.92 / .20	4.00 / .34	6.000 / .013	4.000 / .00	.00 / .00	0 / BOX	.0
1.461	.0825													
20047.070	174.881	2.573	177.454	20.00	1.94 / .06 / .0003	177.51 / .00	.00 / 2.57	.92 / .21	4.00 / .34	6.000 / .013	4.000 / .00	.00 / .00	0 / BOX	.0
1.385	.0825													
20048.460	174.995	2.453	177.448	20.00	2.04 / .06 / .0003	177.51 / .00	.00 / 2.45	.92 / .23	4.00 / .34	6.000 / .013	4.000 / .00	.00 / .00	0 / BOX	.0
1.154	.0825													
20049.610	175.090	2.353	177.443	20.00	2.13 / .07	177.51 / .00	.00 /	.92	4.00	6.000	4.000	.00	0	.0

♀

System 15

Q =	35.73	cfs
V =	5.05	ft/sec
D =	3	ft
A =	7.075248	ft²
Ye =	1.880857	ft
g =	32.2	ft/sec²
Fr =	0.648912	
From Figure 7-2		
Ho =	3.396002	
HLoss/Ho	0.74	
HLoss =	2.513041	
Remaining Energy	0.88296	
Area Above Sill		
Height	0.5	ft
Width	15.25	ft
Area Above Sill	7.625	in
Depth of Sill	0.916667	ft
Total Depth =	1.416667	ft
Velocity	4.685902	ft/sec
TH	1.757624	OK

Figure 7-2

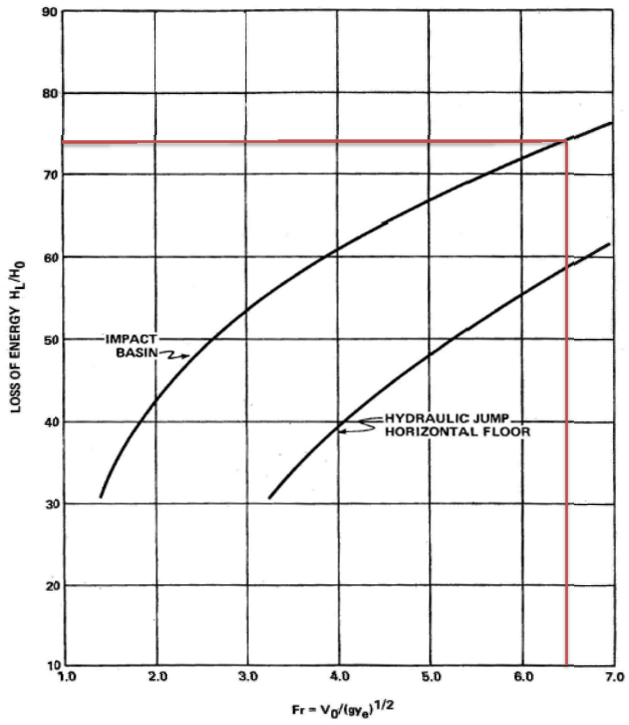


Figure 7-2 Impact Basin Energy Loss Nomograph

San Diego County Drainage Design Manual (July 2005)
Page 7-5

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APPENDIX D

PLANS & PROFILES

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MAPLE CANYON STORM DRAIN PROJECT

WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

UNDERGROUND UTILITIES

AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL REQUEST A MARKOUT OF UNDERGROUND UTILITIES BY CALLING THE BELOW LISTED REGIONAL NOTIFICATION CENTER

FOR AN INQUIRY IDENTIFICATION NUMBER; UNDERGROUND SERVICE ALERT (U.S.A.) AT 1-800-422-4133. BEFORE EXCAVATING FOR THIS CONTRACT, THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES.

CONTRACTOR'S RESPONSIBILITIES

1. LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY, LATERAL RECORDS ARE AVAILABLE TO THE CONTRACTOR AT THE WATER DEPARTMENT, 2797 CAMINITO CHOLLAS. THE CONTRACTOR SHALL LOCATE THE IMPROVEMENTS THAT WILL BE AFFECTED BY LATERAL REPLACEMENTS.
2. THE LOCATIONS OF EXISTING BUILDINGS AS SHOWN ON THE PLAN ARE APPROXIMATE.
3. STORM DRAIN INLETS SHALL REMAIN FUNCTIONAL AT ALL TIMES DURING CONSTRUCTION.
4. UNLESS OTHERWISE NOTED AS PREVIOUSLY POTHOLED (PH), ELEVATIONS SHOWN ON THE PROFILE FOR EXISTING UTILITIES ARE BASED ON A SEARCH OF THE AVAILABLE RECORD INFORMATION ONLY AND ARE SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THE CITY DOES NOT GUARANTEE THAT IT HAS REVIEWED ALL AVAILABLE DATA. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES EITHER SHOWN ON THE PLANS OR MARKED IN THE FIELD IN ACCORDANCE WITH THE SPECIFICATIONS SECTION 5-1 PER THE GREENBOOK.
5. EXISTING UTILITY CROSSING AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT REPRESENTATIVE OF ACTUAL LENGTH AND LOCATION OF CONFLICT AREAS. SEE PLAN VIEW.
6. CONTRACTOR SHALL PROTECT EXISTING PRIVATE PROPERTY AND PLANTINGS AS NECESSARY.
7. CONTRACTOR SHALL SECURE ACCESS TO PRIVATE BUSINESSES DURING CONSTRUCTION.

CONTRACTOR'S NOTE

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD CITY OF SAN DIEGO HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF CITY OF SAN DIEGO PROFESSIONALS.

SPECIAL NOTES

1. THE CONTRACTOR SHALL ENFORCE ALL SAFETY MEASURES. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
2. LOCATION AND ELEVATION OF IMPROVEMENTS TO BE MET BY WORK TO BE DONE SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION OF NEW WORK.
3. IF THERE IS ANY QUESTION REGARDING THESE PLANS OR FIELD STAKES, THE CONTRACTOR SHALL REQUEST AN INTERPRETATION BEFORE DOING ANY WORK BY CALLING THE CITY RESIDENT ENGINEER. THE CONTRACTOR SHALL ALSO TAKE THE NECESSARY STEPS TO PROTECT THE PROJECT AND ADJACENT PROPERTY FROM ANY EROSION AND SILTATION THAT RESULT FROM HIS OPERATIONS BY APPROPRIATE MEANS (SAND BAG, HAY BALES, DIKES, SHORING, ETC.) UNTIL SUCH TIME THAT THE PROJECT IS COMPLETED AND ACCEPTED FOR MAINTENANCE BY WHATEVER OWNER, AGENCY OR ASSOCIATION IS TO BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE.
4. CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN HEREON AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

MONUMENTATION NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SURVEY MONUMENTS AND/OR BENCHMARKS WHICH WILL BE DISTURBED OR DESTROYED BY CONSTRUCTION. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR THE REGISTERED CIVIL ENGINEER AS REQUIRED BY THE PROFESSIONAL LAND SURVEYOR'S ACT (BUSINESS AND PROFESSIONS CODE 8771).

TRAFFIC CONTROL NOTE

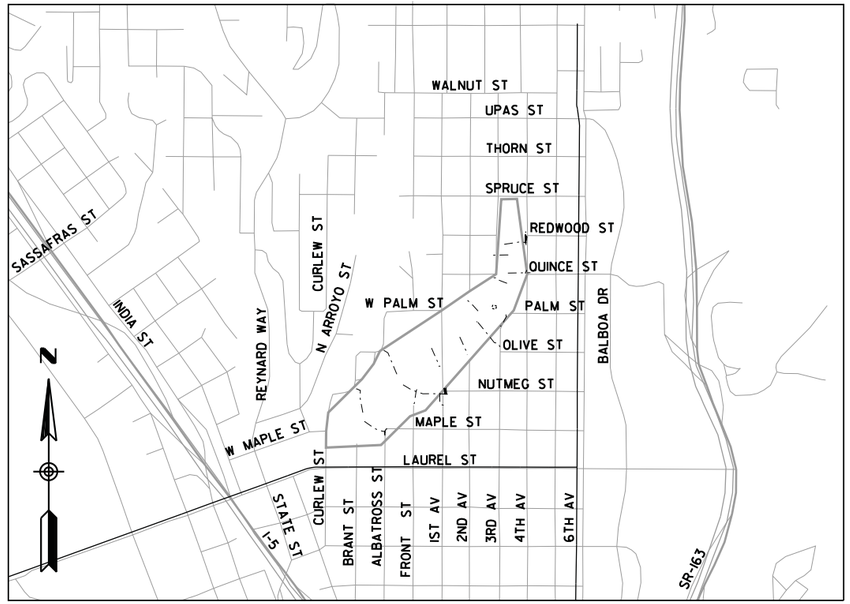
THE CONTRACTOR SHALL, PER SECTION 7-10.2.1 OF THE CONTRACT SPECIAL PROVISIONS, PREPARE TRAFFIC CONTROL SHOP DRAWINGS AND SUBMIT THEM TO THE RESIDENT ENGINEER. THE SHOP DRAWINGS WILL BE SENT TO THE ENGINEERING TRAFFIC CONTROL SECTION FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL ALLOW A MINIMUM OF TWENTY (20) WORKING DAYS FOR REVIEW OF THE SHOP DRAWINGS. UPON APPROVAL OF THE TRAFFIC CONTROL PLAN, THE ENGINEERING TRAFFIC CONTROL SECTION WILL ISSUE A TRAFFIC CONTROL PLAN (TCP) PERMIT. WORK SHALL NOT BEGIN IN THE PUBLIC RIGHT OF WAY WITHOUT THE APPROVED TCP PERMIT.

STORM WATER PROTECTION

1. THIS PROJECT WILL DISTURB LESS THAN AN ACRE OF LAND AREA, THEREFORE A WATER POLLUTION CONTROL PLAN (WPCP) IS REQUIRED. HOWEVER, A WEATHER TRIGGERED ACTION PLAN (WTAP) IS NOT REQUIRED.
2. THIS PROJECT IS SUBECT TO STORM WATER MUNICIPAL WATER PERMINT No. ---------- AND WPCP.

WATER POLLUTION CONTROL NOTE

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS NOTED IN THE WHITEBOOK 2012 CITY SUPPLEMENT SEC 701 - WATER POLLUTION CONTROL.



KEY MAP
NO SCALE

SHEET INDEX

COVER SHEET	G-1
ABBREVIATIONS & CONSTRUCTION DETAILS	G-2
SHEET INDEX & MAP	G-3
STORM DRAIN PLAN & PROFILE	C-1 THRU C-24
EROSION CONTROL PLAN	C-25

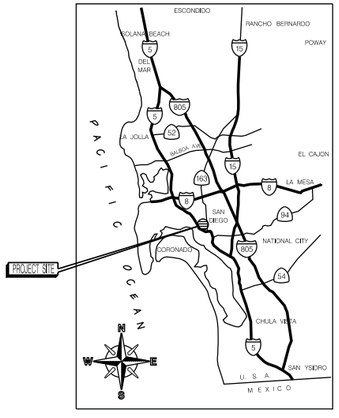
FIELD DATA

THE BASIS OF BEARINGS FOR THIS SURVEY IS

BENCH:
CITY OF SAN DIEGO BENCH MARK "108
A BRASS DISK IN CURB AT THE
NORTHWEST CORNER OF 2ND AVE.
AND QUINCE ST.
ELEVATION = 269.15
DATUM: NGVD 29

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

KERI GANNON, R.C.E. 68877, EXP 09/30/2017 — DATE



VICINITY MAP
NOT TO SCALE

CONSTRUCTION SITE STORM WATER PRIORITY (INSPECTION FREQUENCY): LOW

TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY: HIGH .... MEDIUM .... LOW X.

AS-BUILT INFORMATION

MATERIALS	MANUFACTURER
PIPE CL 235 (WATER)	-
PIPE SDR 35 (SEWER)	-
GATE VALVES	-
FIRE HYDRANTS	-
SEWER MANHOLES	-
REHABILITATE SEWER MANHOLES	-
REHABILITATE SEWER MAIN	-

LEGEND

IMPROVEMENTS	STANDARD DRAWINGS
RCP STORM DRAIN	D-61, D-62, SDD-110, SDG-107
STORM DRAIN CLEANOUT TYPE A	D-9, D-10, SDD-114, D-61, M-3
STORM DRAIN CATCH BASIN TYPE 1	SDRSD D-29
STORM DRAIN CURB INLET TYPE B	SDD-116
STORM DRAIN CURB INLET TYPE A	SDD-115
CURB AND GUTTER - COMBINED TYPE G, PER CSDSD	SDG-151
CONCRETE PIPE COLLAR	SDRSD D-62
TEMPORARY ACCESS ROAD	-
FENCE	M-6
LIMITS OF TRENCH	-
WORK ZONE	-
GRADING LIMITS	-
CONCRETE ANCHOR	SDS-114
CONCRETE ENERGY DISSIPATOR	SDD-105

EXISTING STRUCTURES

- EX WATER MAIN & VALVES
- EX FIRE HYDRANT
- EX SEWER MAIN & MANHOLES
- EX DRAINS
- EX PAVEMENT (PROFILE)
- EX GROUND LINE (PROFILE)
- GAS MAIN
- ELEC., COND., TEL. COND., CATV
- EX FENCE
- EX ESL (ENVIRONMENTALLY SENSITIVE LANDS)
- EX JDW (JURISDICTIONAL WATERS)
- DRIVEWAY
- PEDESTRIAN RAMP
- GUARDRAIL
- PARKING METER
- STEPS
- STREET LIGHT
- TREES
- UTILITY POLE
- GUY WIRE
- INLET
- CLEANOUT

100% SUBMITTAL
PRELIMINARY, NOT FOR CONSTRUCTION

G-1

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
COVER SHEET

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 01 OF XX SHEETS

WBS B-12040

APPROVED: _____ FOR CITY ENGINEER — DATE

DESIGNED BY: MERYL JIMENEZ, PROJECT MANAGER
CHECKED BY: NICOLE SALEM, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

206-1719 CCS27 COORDINATE
1846-6276 CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321-01-D

SPEC. NO.

REGISTERED PROFESSIONAL ENGINEER — KERI H. GANNON — No. 68877 — Exp. 09/30/17 — CIVIL — STATE OF CALIFORNIA

CONSTRUCTION CHANGE / ADDENDUM

CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

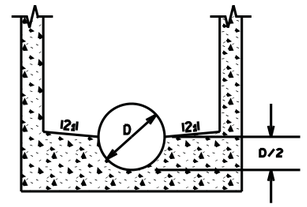
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MAPLE CANYON STORM DRAIN PROJECT

MAPLE CANYON
STORM DRAIN PROJECT

ABBREVIATIONS

ABAND	ABANDON	E/O	EAST OF	RCP	REINFORCED CONCRETE PIPE
ABAND'D	ABANDONED	F	FLANGE	RED	REDUCER
AC	ASBESTOS CEMENT	FG	FINISHED GROUND	RT	RIGHT
AHD	AHEAD	FL	FLOW LINE	R/W	RIGHT OF WAY
ASSY	ASSEMBLY	FPS	FEET PER SECOND	SD	STORM DRAIN
BK	BACK	GB	GATE VALVE	SHT	SHEET
BTWN	BETWEEN	GV	GRADE BREAK	SL	SURVEY LINE
CAB	CRUSHED AGGREGATE BASE	HDPE	HIGH-DENSITY POLYETHYLENE	SO	STUB OUT
CATV	CABLE TV	HP	HIGH PRESSURE	ST	STREET
CFS	CUBIC FEET PER SECOND	IE	INVERT ELEVATION	STA	STATION
CI	CAST IRON PIPE	JDW	JURISDICTIONAL WATERS	S/E	SOUTH EAST
CL, C	CENTER LINE	L	LENGTH	S/O	SOUTH OF
CMP	CORRUGATED METAL PIPE	LAT	LATERAL	S/W	SOUTH WEST
CO	CLEANOUT	LF	LINEAR FEET	SWR	SEWER
CONC	CONCRETE	LT	LEFT	TC	TOP OF CURB
COND	CONDUIT	MJ	MECHANICAL JOINT	TEL	TELEPHONE
CONT	CONTINUED	MTD	MULTIPLE TELEPHONE DUCT	UNK	UNKNOWN
CONTR	CONTRACTOR	N/E	NORTH EAST	VC	VITRIFIED CLAY PIPE
DB	DIRECT BURIED	N/O	NORTH OF	WM	WATER METER
DI	DRAINAGE INLET	N/W	NORTH WEST	WTR	WATER
EB	ENCASED BURIED	OG	ORIGINAL GROUND	W/O	WEST OF
EL, ELEV	ELEVATION	OVHD	OVER HEAD		
ELEC	ELECTRIC	PVC	POLYVINYL CHLORIDE		
ESL	ENVIRONMENTALLY SENSITIVE LANDS	PROP	PROPOSED		
EX, EXIST	EXISTING				



DETAIL 1
CLEANOUT HALF BENCH

MAPLE CANYON STORM DRAIN PROJECT

G–2

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
ABBREVIATIONS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 02 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

DESIGNED BY MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

1846-6276
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321–02–D

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

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5/21/2013

MAPLE CANYON STORM DRAIN PROJECT



NOTES:

1. ORNAMENTAL PLANT AREA
2. NONNATIVE GRASSLAND
3. COASTAL SAGE SCRUB
4. EUCALYPTUS WOODLAND
5. NONNATIVE RIPARIAN
6. COASTAL LIVE OAK WOODLAND
7. LIMITS OF JURSDICTIONAL WATERS
8. TEMPORARY ACCESS ROAD
9. STAGING AREA

G-3

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
SHEET INDEX & MAP

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 03 OF XX SHEETS

WBS B-12040

APPROVED FOR CITY ENGINEER _____ DATE _____

DESIGNED BY MERYL JIMENEZ, PROJECT MANAGER

DRAWN BY NICOLE SALEM, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

206-1719 CCS27 COORDINATE

1846-6276 CCS83 COORDINATE

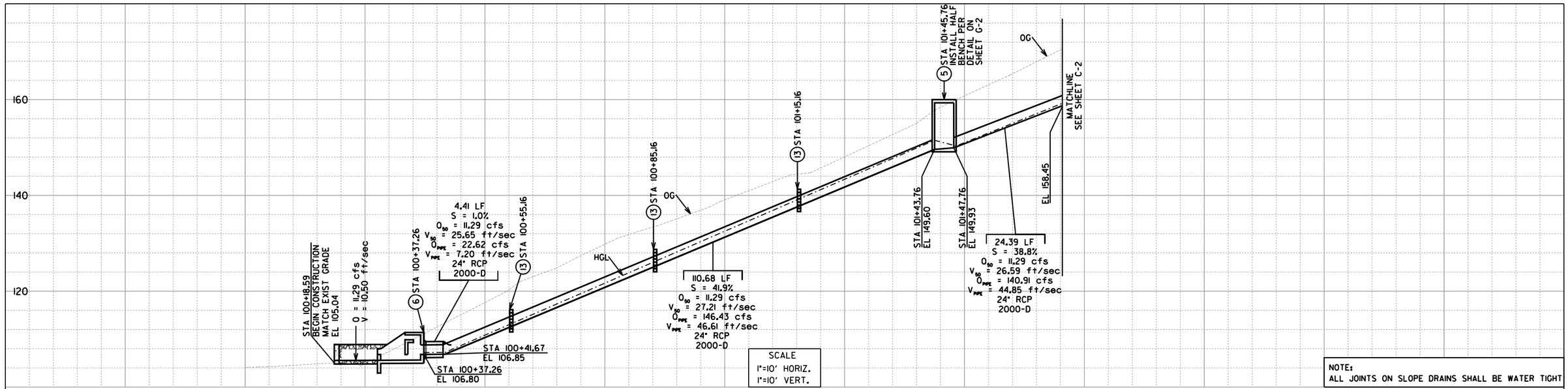
CONTRACTOR _____ DATE STARTED _____

INSPECTOR _____ DATE COMPLETED _____

38321-03-D

REGISTERED PROFESSIONAL ENGINEER
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No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

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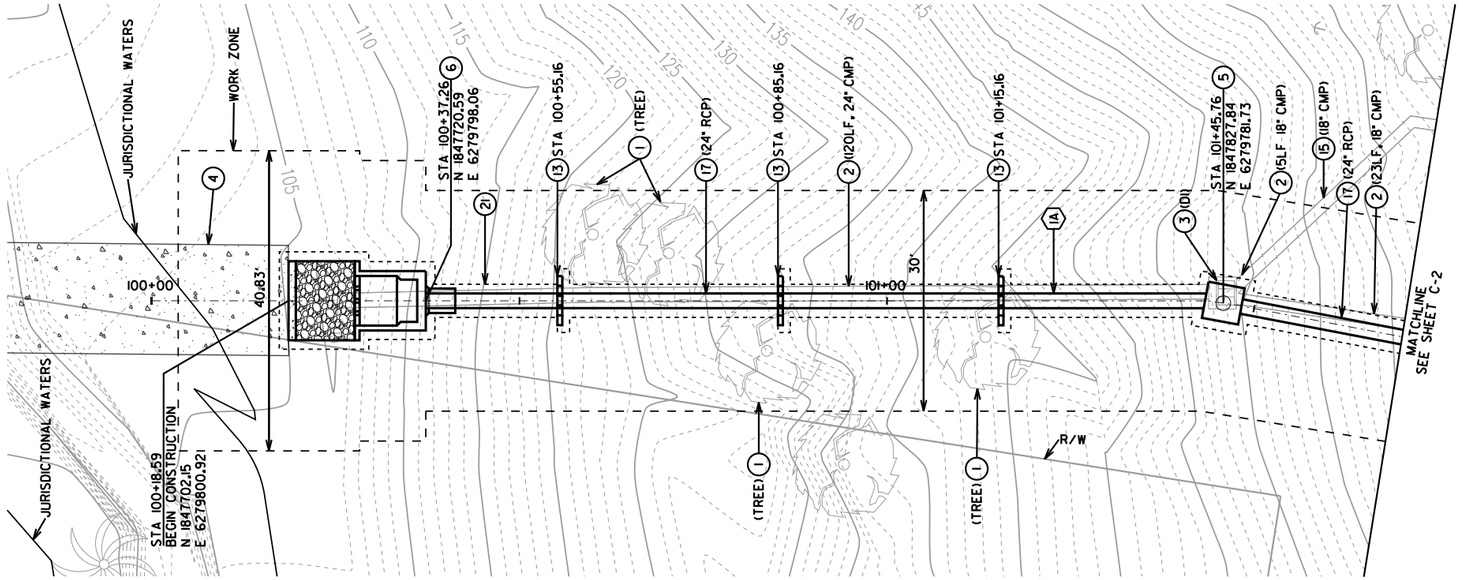


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

NOTES:

1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
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17. CONSTRUCT NEW STORM DRAIN PIPE
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19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



SDD-105	
PIPE DIA (in)	24
AREA (sq ft)	3.14
MAX Q (cfs)	38
W	6'-9"
H	5'-3"
L	9'-0"
a	3'-11"
b	5'-1"
c	2'-10"
d	1'-2"
e	0'-6"
f	2'-0"
g	2'-6"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
1/4 TON	2.7'	CAB	1	12"

STORM DRAIN PLAN
SYSTEM 1A – BRANT AND BARNSON

SCALE 1"=10'

REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-1

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

APPROVED _____ FOR CITY ENGINEER _____ DATE

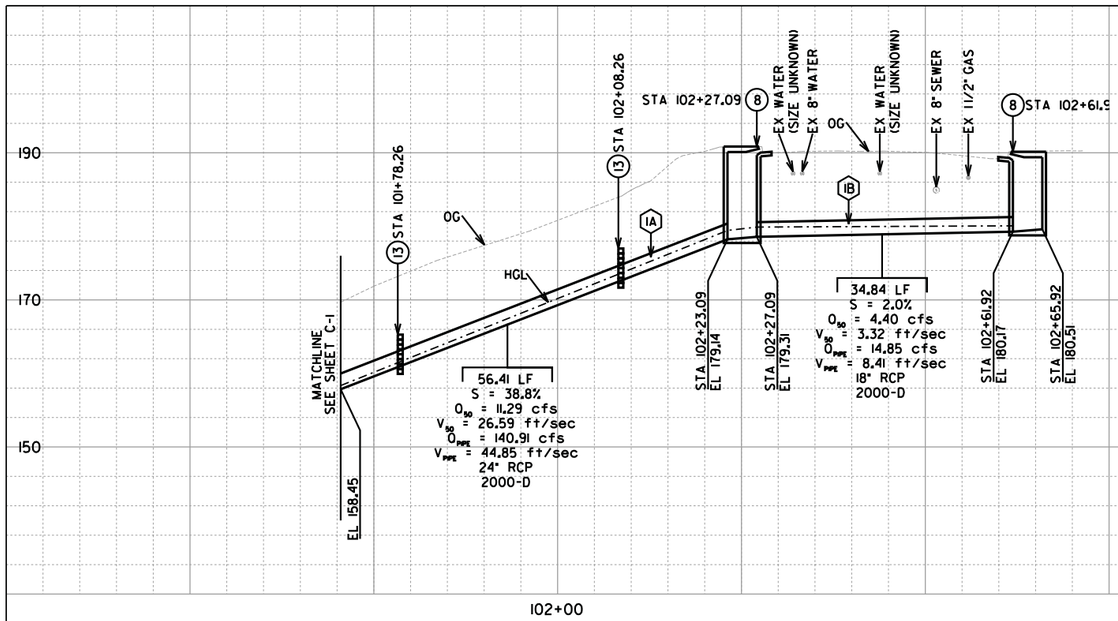
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WBS B-12040
DESIGNED BY MERYL JIMENEZ PROJECT MANAGER
CHECKED BY NICOLE SALEM PROJECT ENGINEER
206-1713 CCS27 COORDINATE
1846-6273 CCS83 COORDINATE
38321-04-D

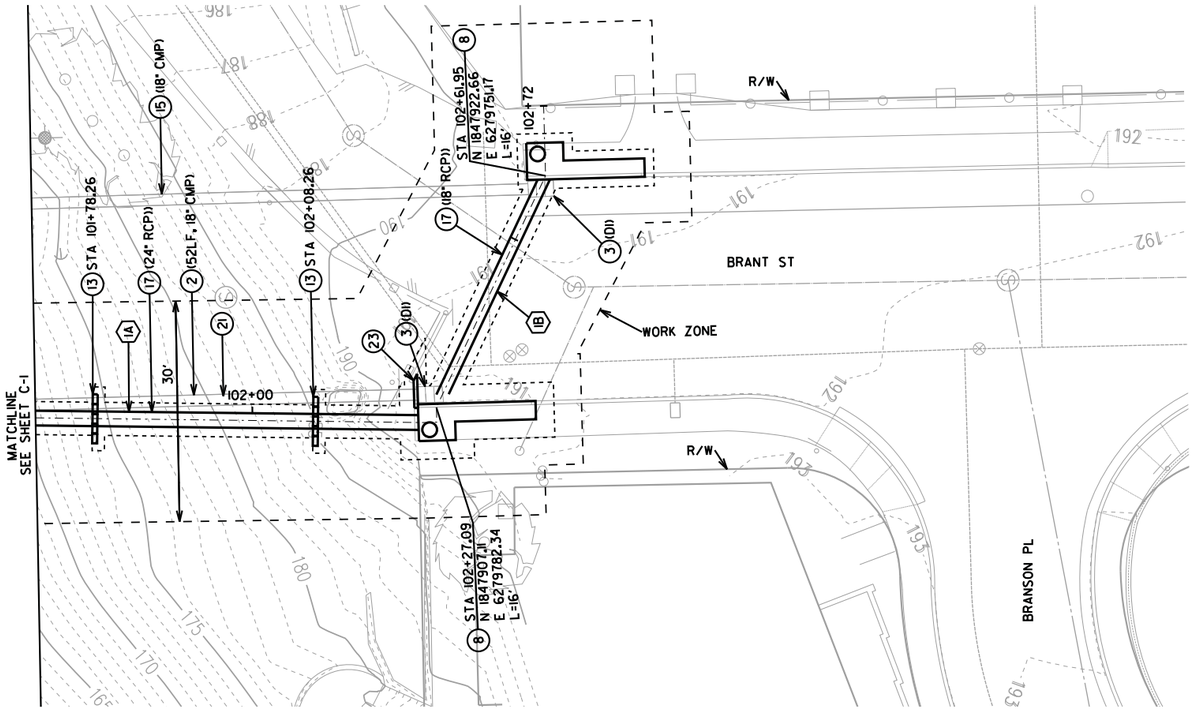
MAPLE CANYON STORM DRAIN PROJECT

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2/21/2016
pdtreacy



SCALE
1"=10' HORIZ.
1"=10' VERT.

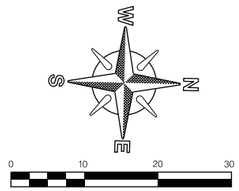
NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



STORM DRAIN PLAN
SYSTEM 1A & 1B – BRANT AND BARNSON

STORM DRAIN SYSTEM NO.

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
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13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
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21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



REGISTERED PROFESSIONAL ENGINEER
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Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-2

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER
DATE

DESIGNED BY MERYL JIMENEZ PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM PROJECT ENGINEER

206-1713 CCS27 COORDINATE

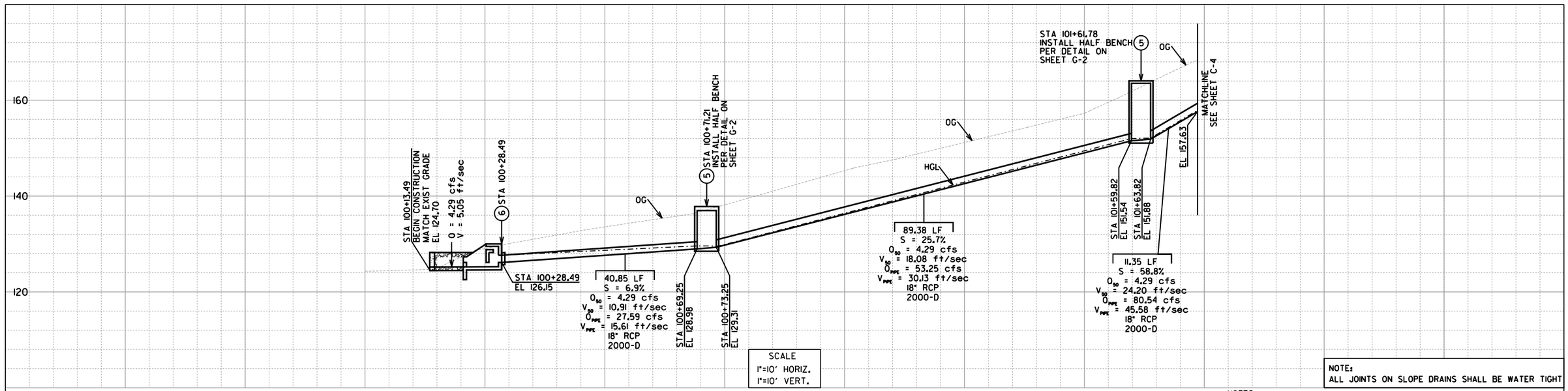
1846-6273 CCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

38321-05-D

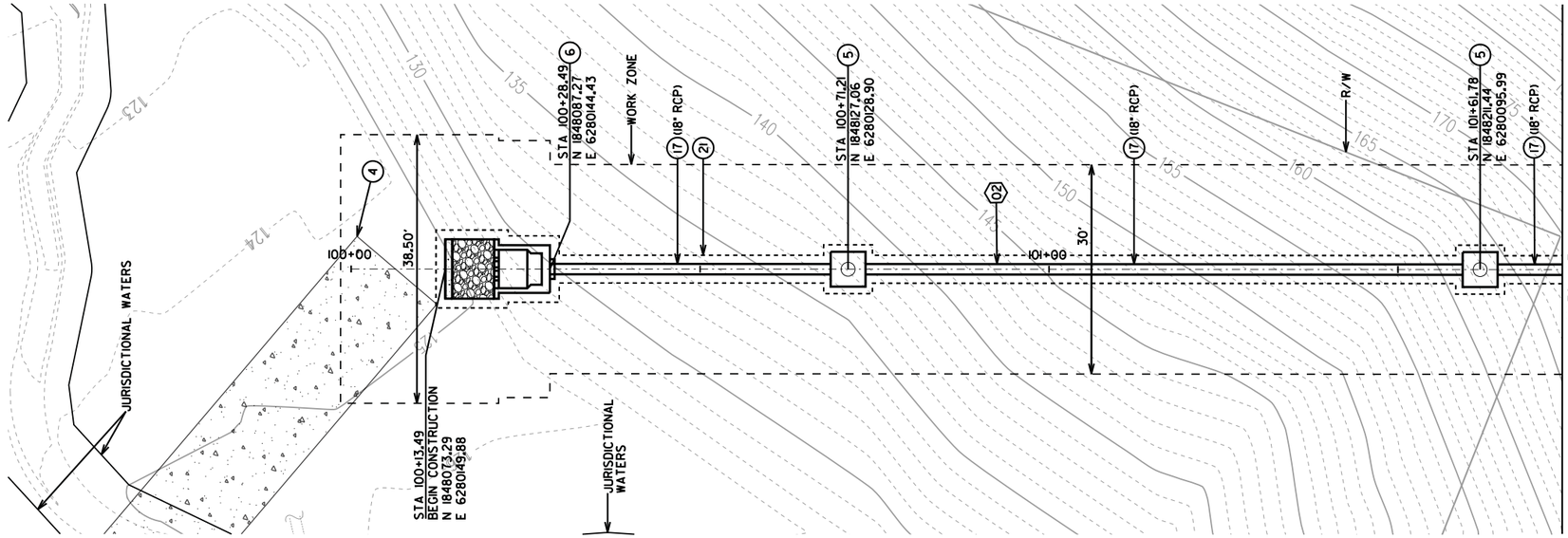
MAPLE CANYON STORM DRAIN PROJECT

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NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

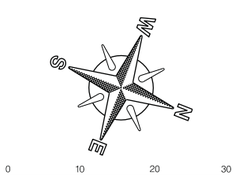


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21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 02 – ALBATROSS & OLIVE



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
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Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

MAPLE CANYON STORM DRAIN PROJECT

C-3

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

206-1713
CCS27 COORDINATE

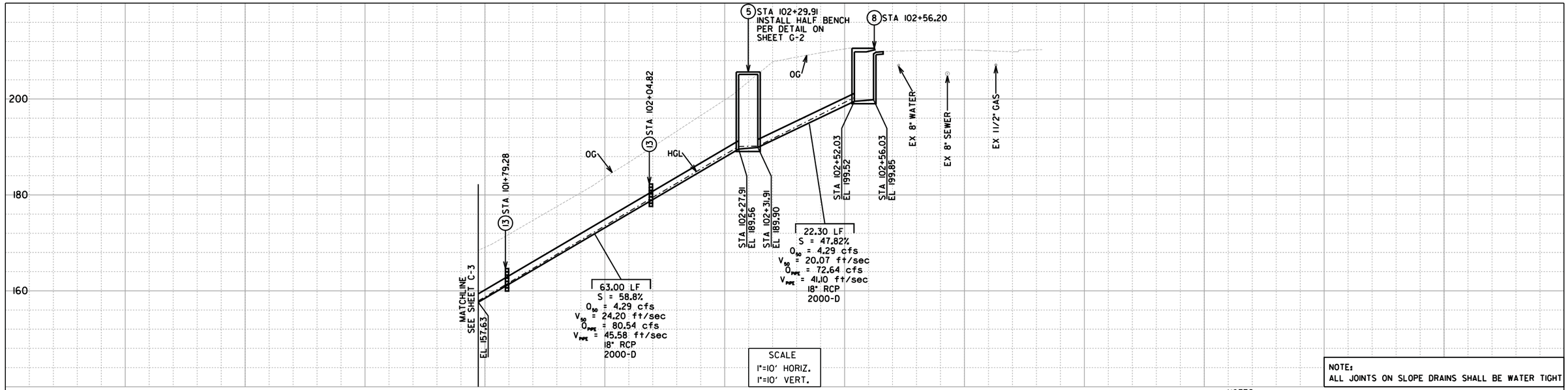
1846-6273
CCS83 COORDINATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321-06-D

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5/27/2015

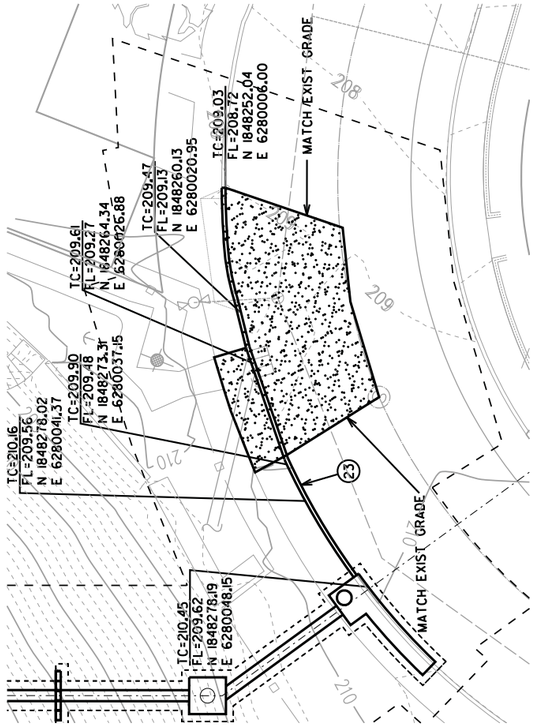


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

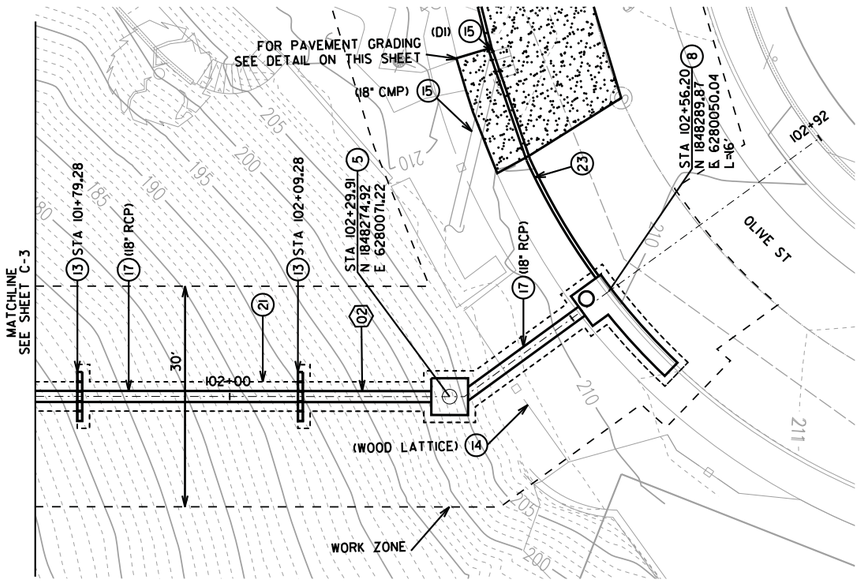
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21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



PAVING DETAIL



STORM DRAIN PLAN
SYSTEM 02 – ALBATROSS & OLIVE



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-4

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

206-1713
CCS27 COORDINATE

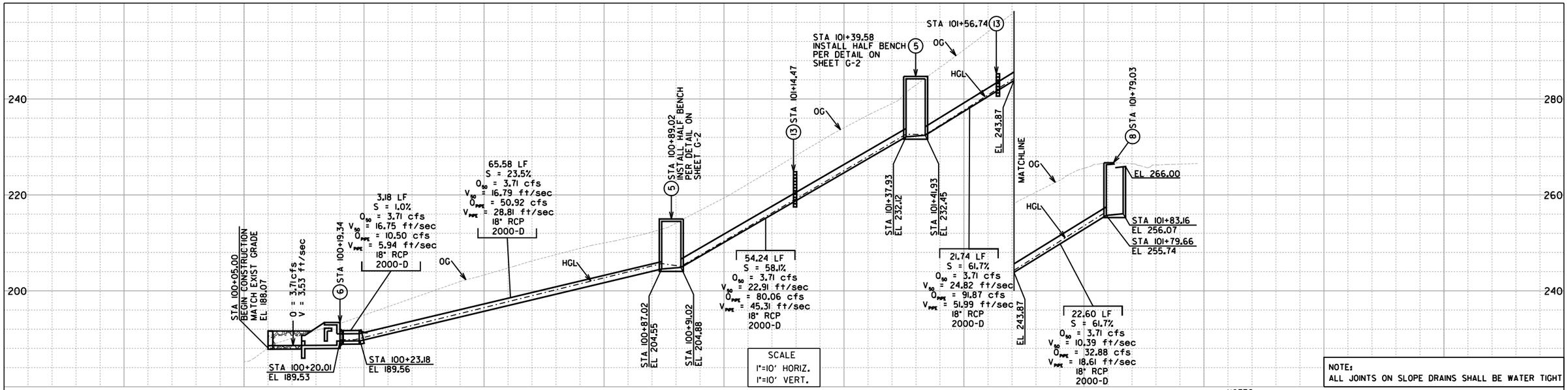
1846-6273
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321-07-D

MAPLE CANYON STORM DRAIN PROJECT

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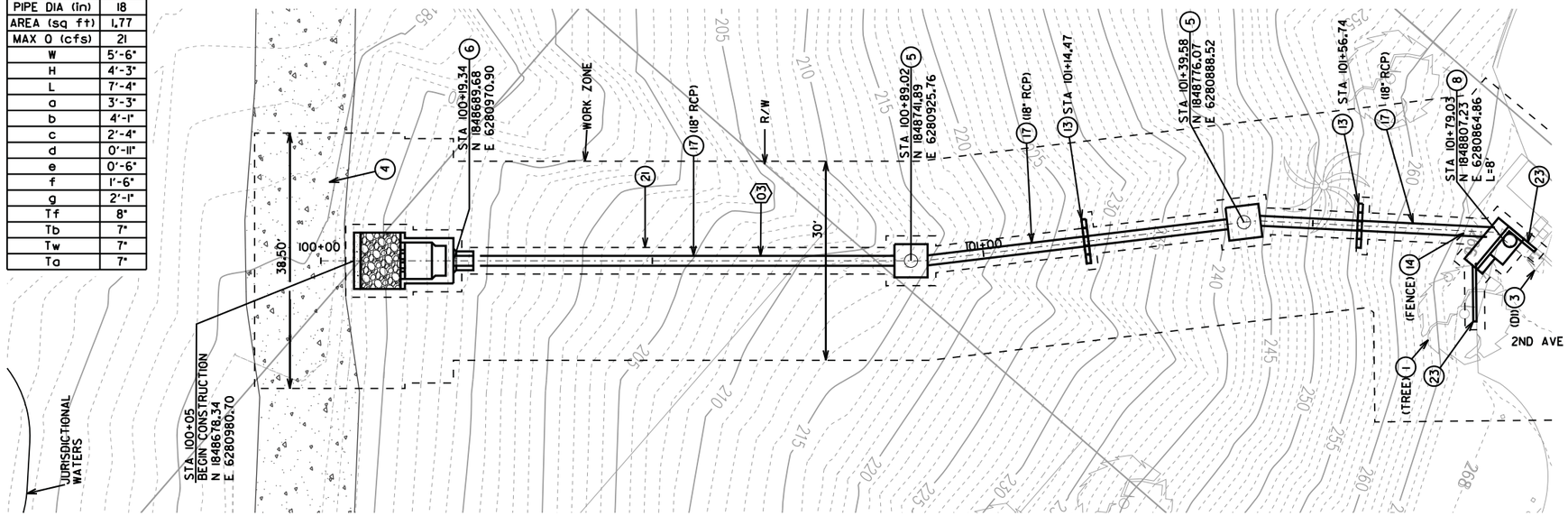
NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

NOTES:

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SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
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L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"



SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 03 – 2ND AVE BETWEEN QUINCE & PALM

SCALE 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-5

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT

STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER DATE

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY
NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

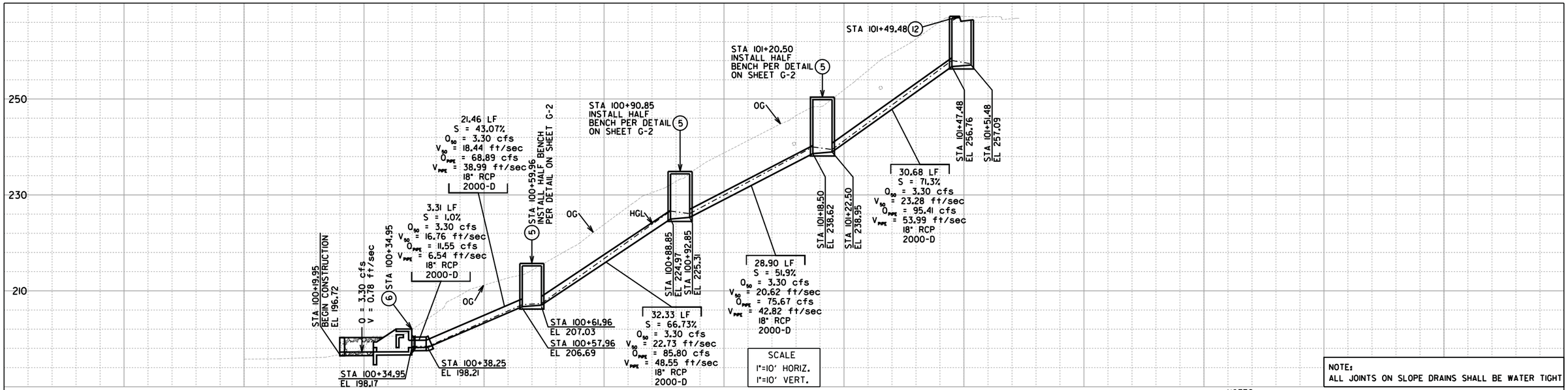
1846-6276
CCS83 COORDINATE

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

38321-08-D

MAPLE CANYON STORM DRAIN PROJECT

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5/21/2015
gehlsen

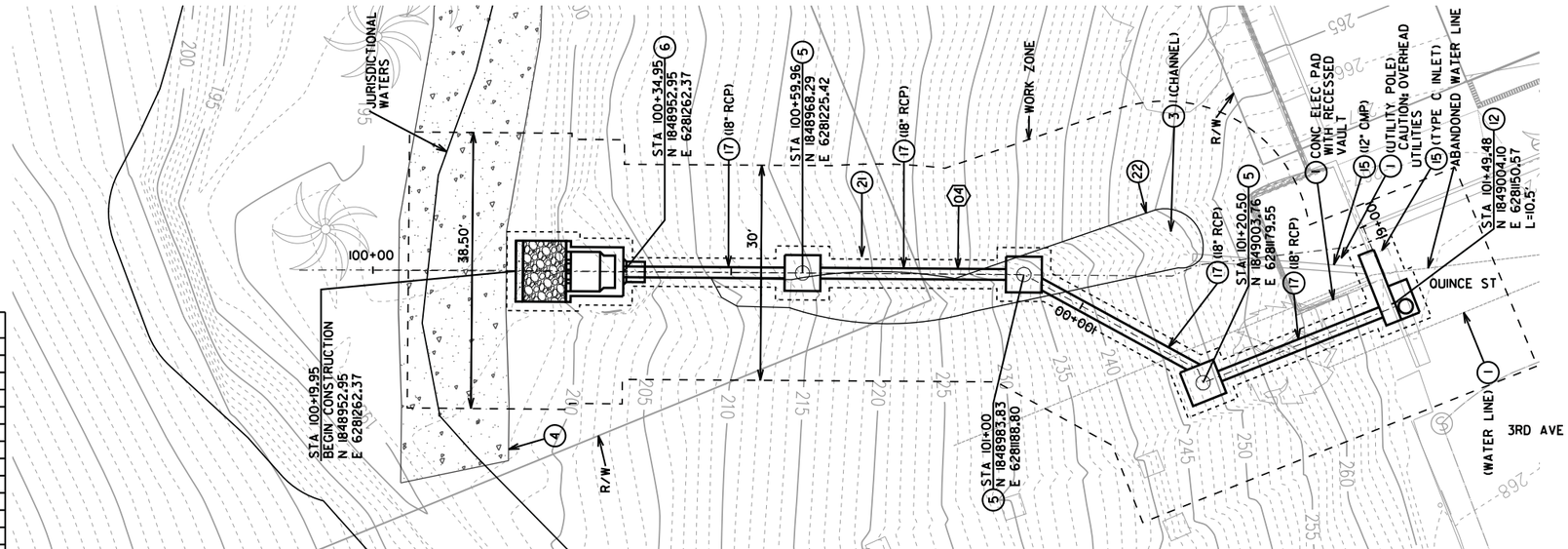


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

NOTES:

1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 04 – 3RD & QUINCE

SCALE 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

MAPLE CANYON STORM DRAIN PROJECT

C-6

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

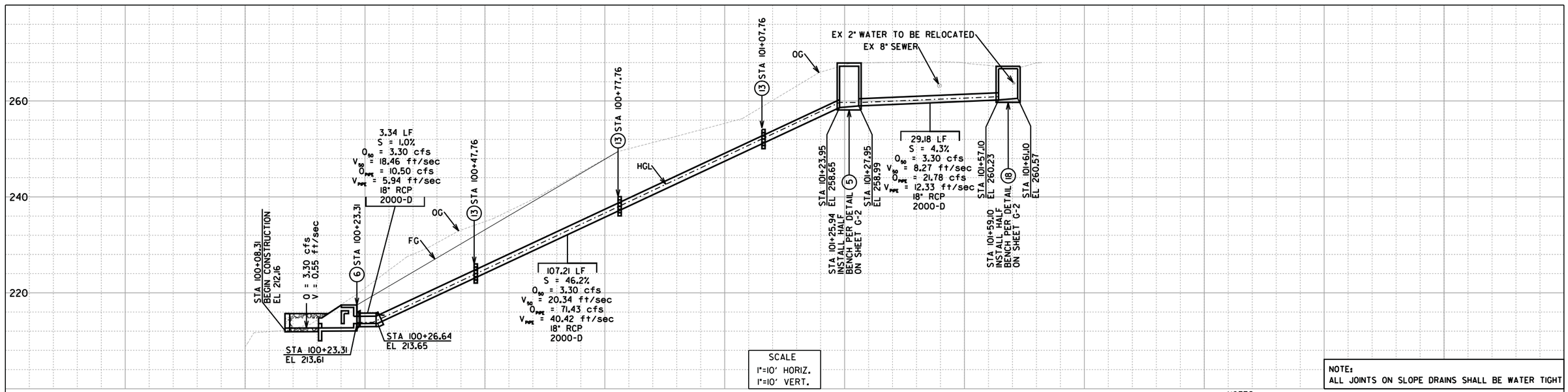
206-1719
CCS27 COORDINATE

1846-6276
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321-09-D

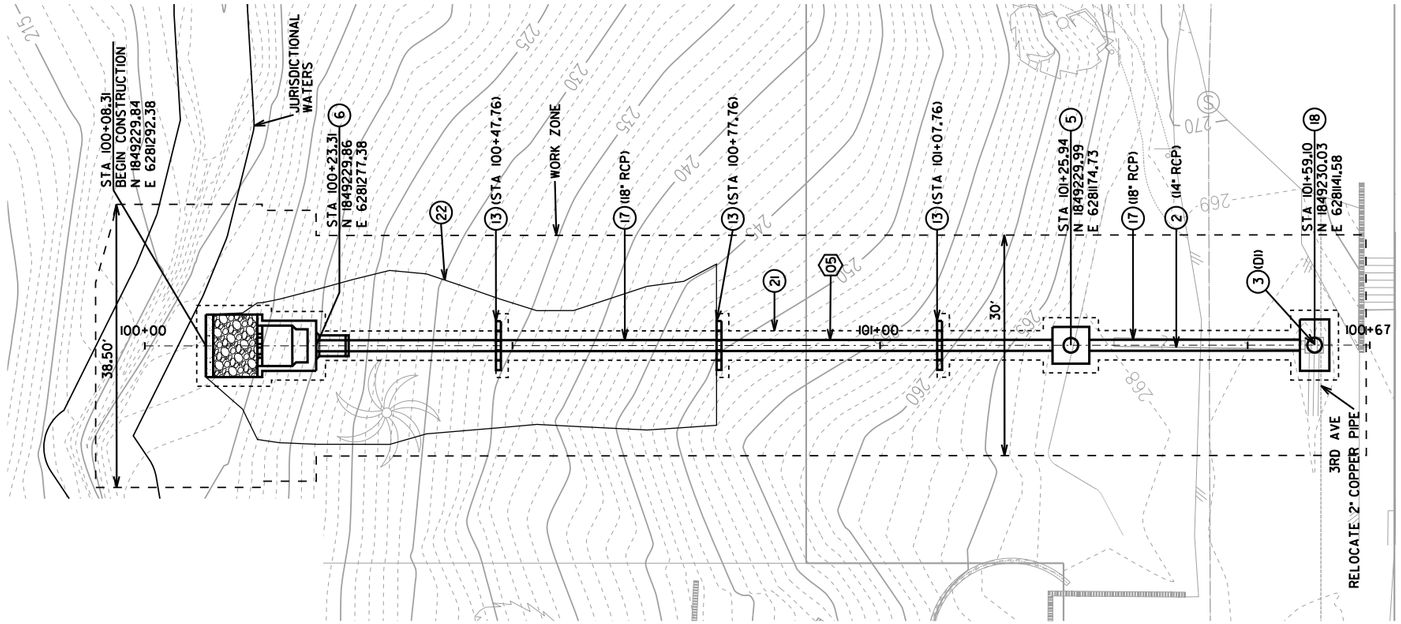
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pdtlaser1
5/27/2015



SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.



SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 05 – 3RD BETWEEN QUINCE & REDWOOD

SCALE 1" = 10'

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

C-7

MAPLE CANYON STORM DRAIN PROJECT

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED FOR CITY ENGINEER _____ DATE _____

SUBMITTED BY MERYL JIMENEZ PROJECT MANAGER

DESIGNED BY NICOLE SALEM PROJECT ENGINEER

206-1719 CCS27 COORDINATE

1846-6276 CCS83 COORDINATE

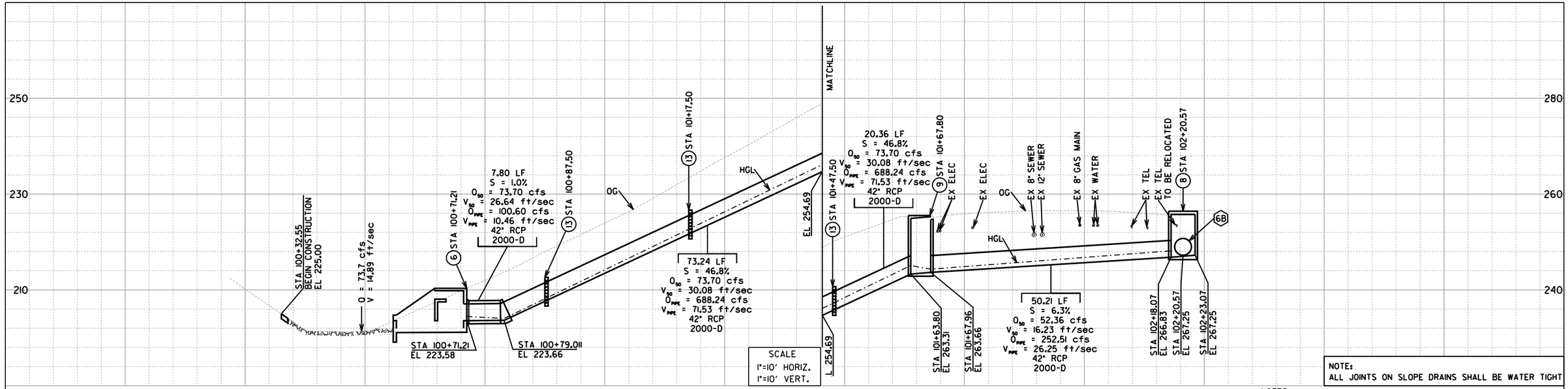
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

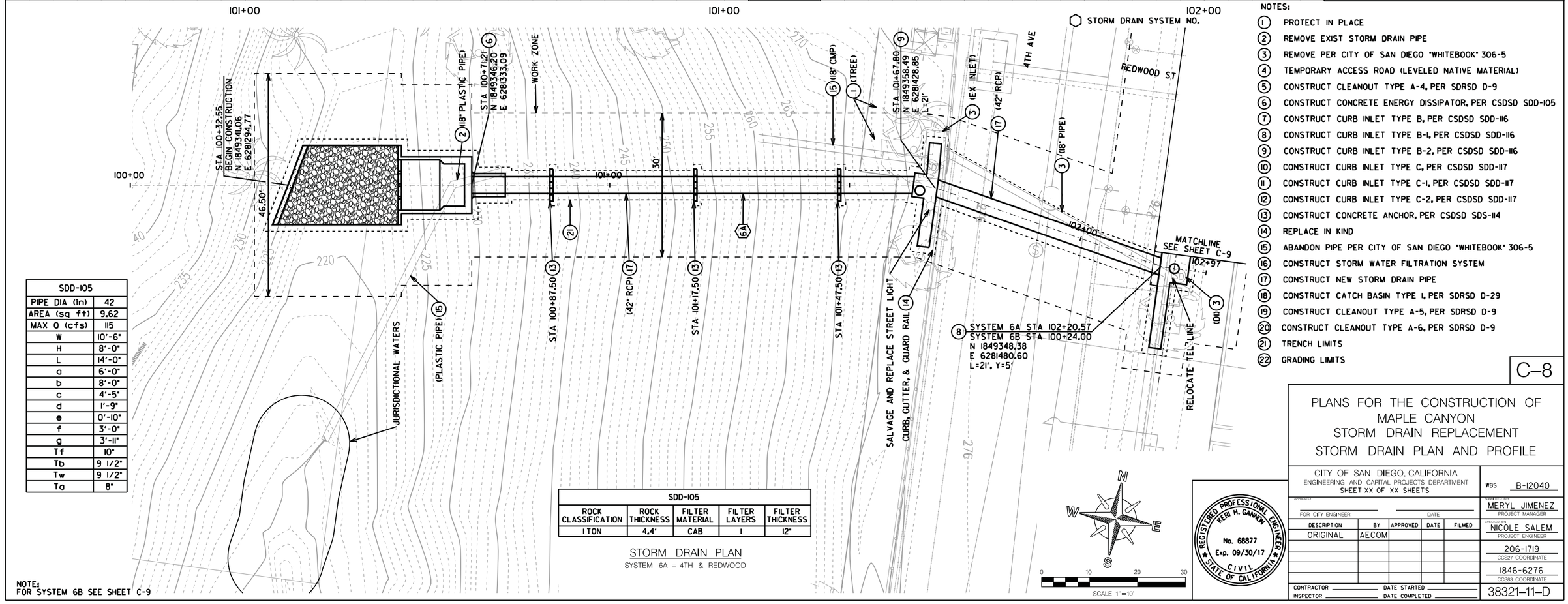
38321-10-D

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

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5/27/2015
jeffbeall



NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



NOTE:
FOR SYSTEM 6B SEE SHEET C-9

SDD-105	
PIPE DIA (in)	42
AREA (sq ft)	9.62
MAX Q (cfs)	115
W	10'-6"
H	8'-0"
L	14'-0"
a	6'-0"
b	8'-0"
c	4'-5"
d	1'-9"
e	0'-10"
f	3'-0"
g	3'-11"
Tf	10"
Tb	9 1/2"
Tw	9 1/2"
Ta	8"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
1 TON	4.4'	CAB	1	12"

STORM DRAIN PLAN
SYSTEM 6A – 4TH & REDWOOD

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. CONSTRUCT CURB INLET TYPE C, PER CSDSD SDD-117
11. CONSTRUCT CURB INLET TYPE C-1, PER CSDSD SDD-117
12. CONSTRUCT CURB INLET TYPE C-2, PER CSDSD SDD-117
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PIPE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. CONSTRUCT STORM WATER FILTRATION SYSTEM
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS

REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-8

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER ____ DATE ____

DESIGNED BY MERYL JIMENEZ, PROJECT MANAGER
CHECKED BY NICOLE SALEM, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

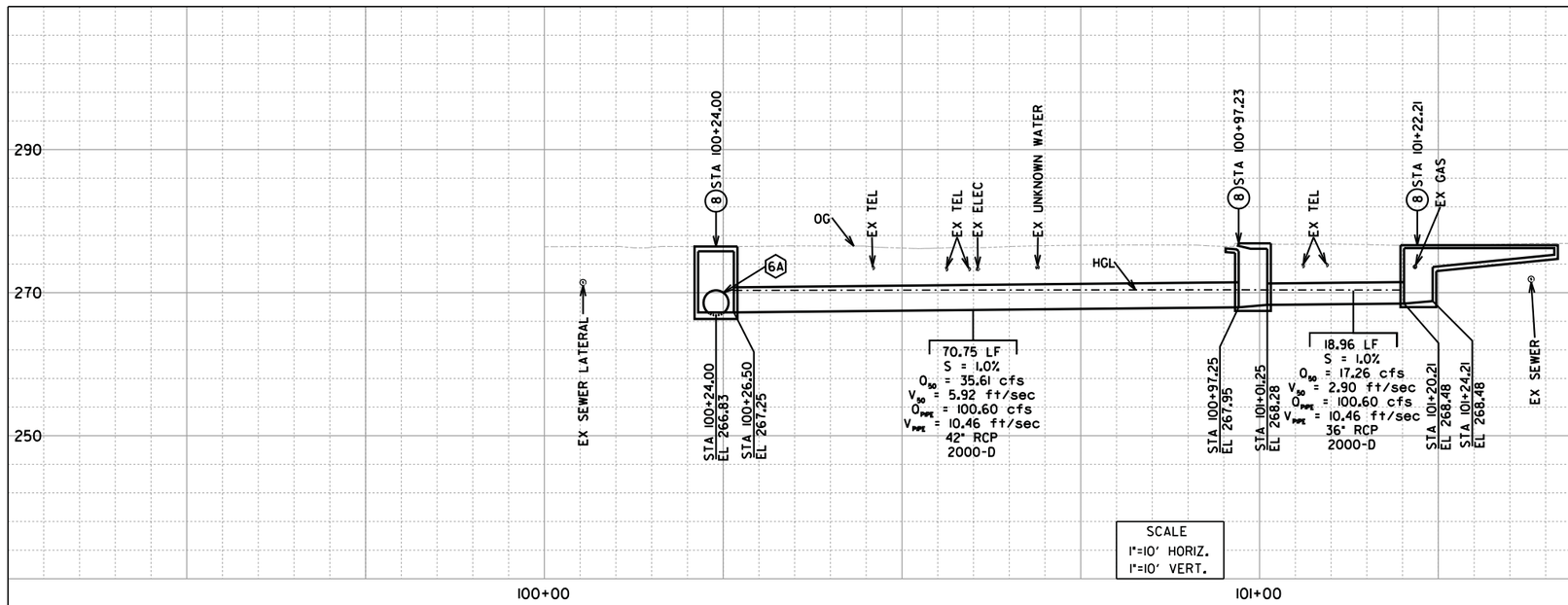
206-1719 CCS27 COORDINATE
1846-6276 CCS83 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

38321-11-D

MAPLE CANYON STORM DRAIN PROJECT

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pdtheej
5/27/2015



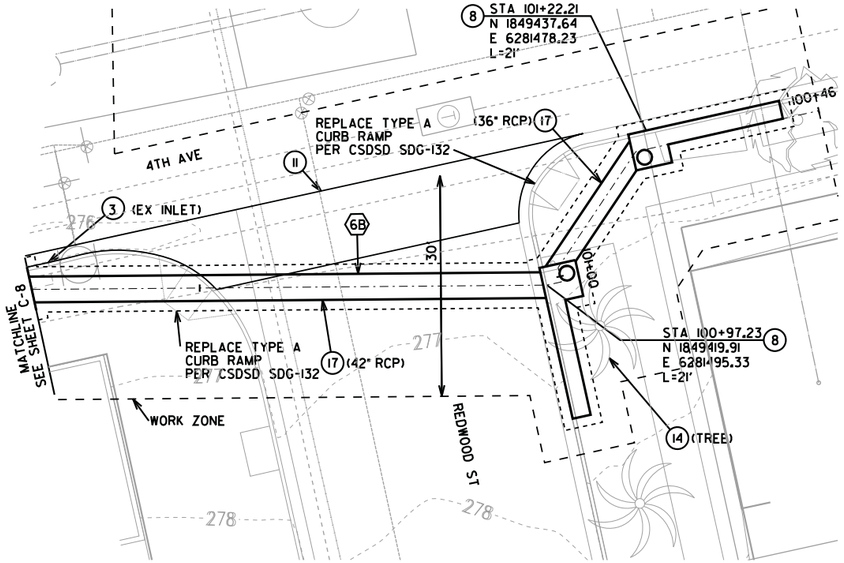
SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

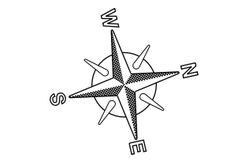
NOTES:

1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



STORM DRAIN PLAN
SYSTEM 6B – 4TH & REDWOOD

NOTE:
FOR SYSTEM 6A SEE SHEET C-8



REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-9

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER — DATE

DESIGNED BY MERYL JIMENEZ, PROJECT MANAGER
CHECKED BY NICOLE SALEM, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

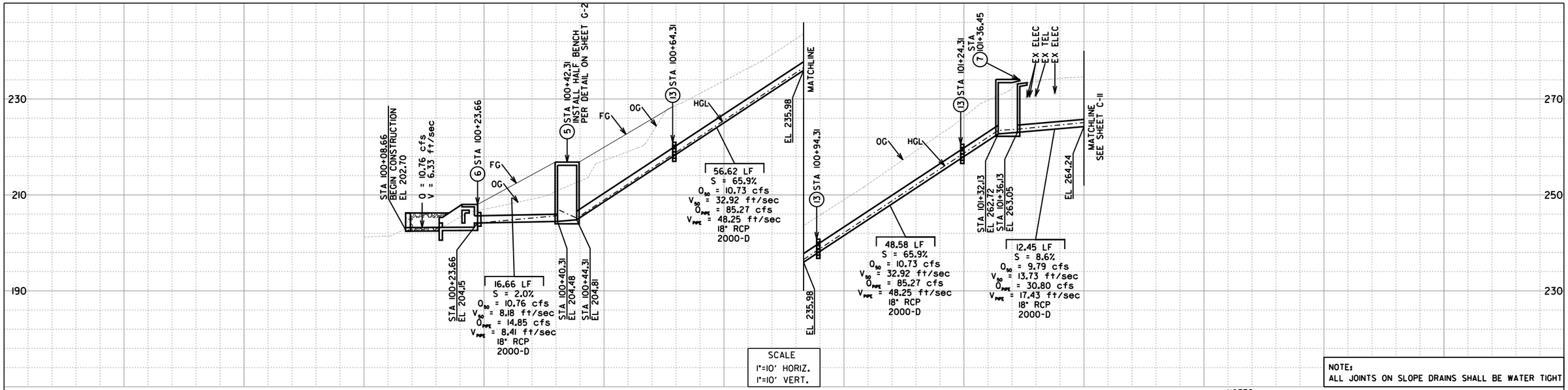
206-1719 CCS27 COORDINATE
1846-6276 CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38321-12-D

MAPLE CANYON STORM DRAIN PROJECT

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gstroud
12/7/2016

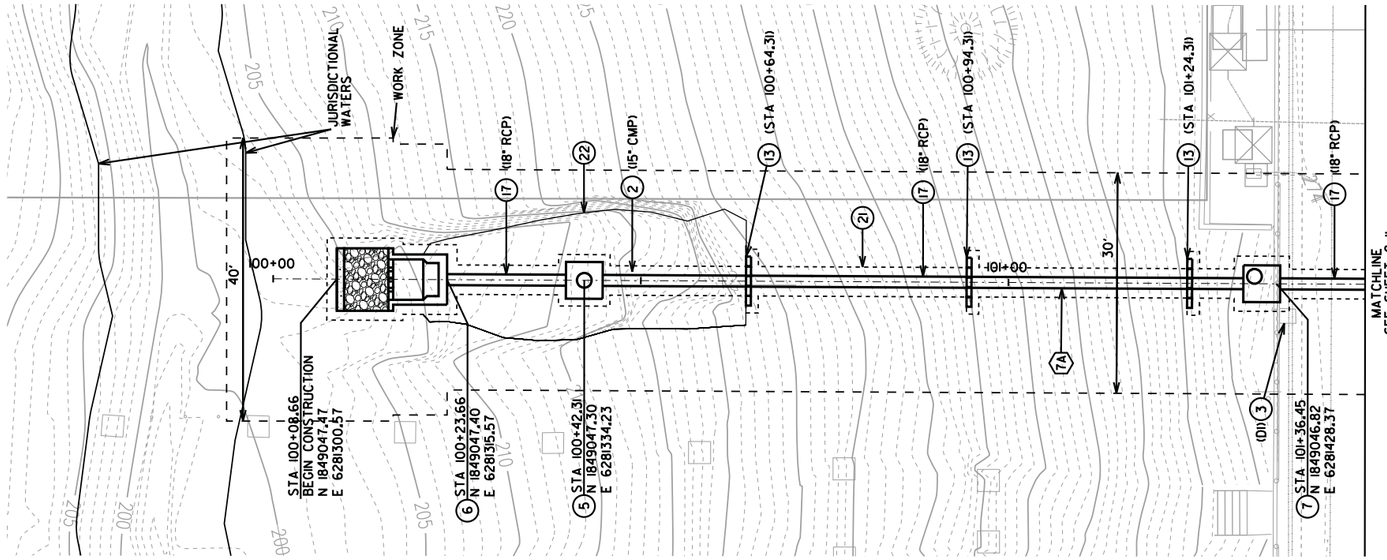


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

NOTES:

1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



STORM DRAIN PLAN
SYSTEM 7A – 4TH AVE QUINCE ST

SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	12"

N
W E
S
0 10 20 30
SCALE 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

MAPLE CANYON STORM DRAIN PROJECT

C–10

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER DATE

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

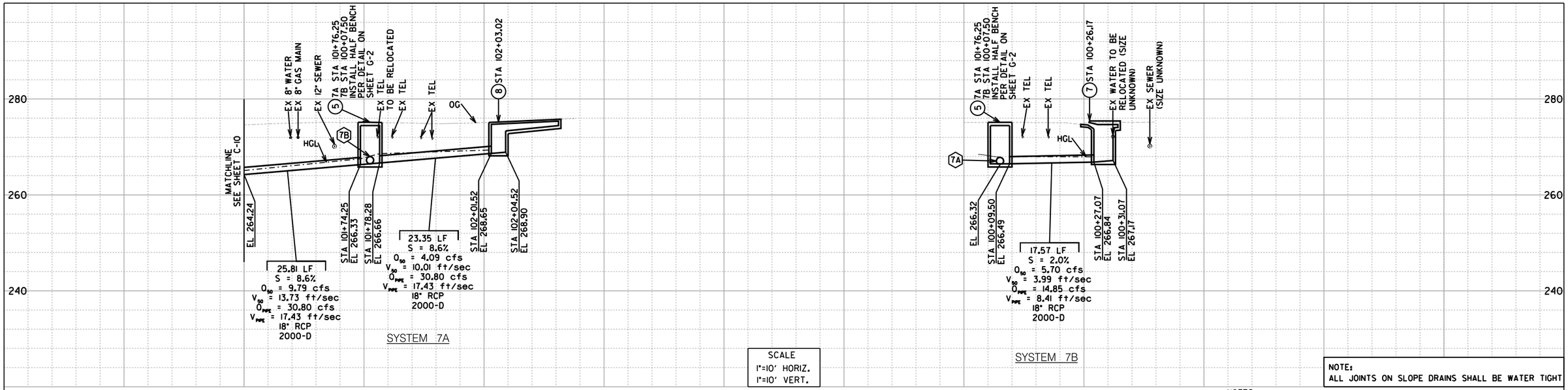
1846-6276
CCS83 COORDINATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

38321-13-D

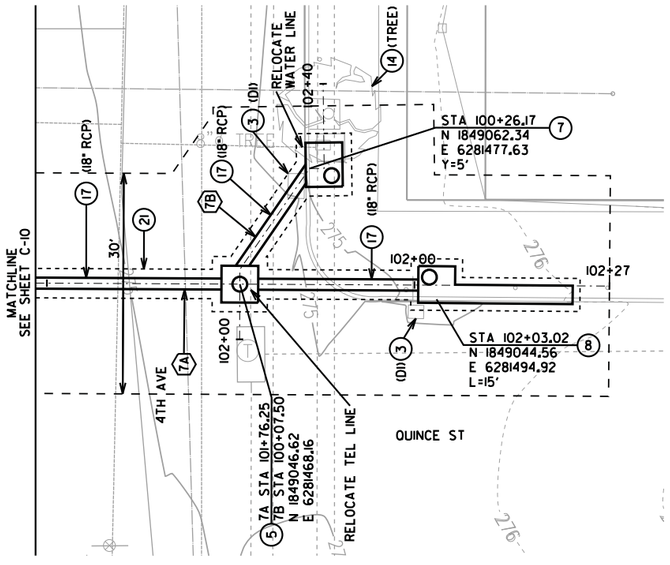
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5/21/2015
jeffbeall



SCALE
1"=10' HORIZ.
1"=10' VERT.

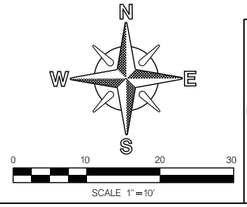
NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.



STORM DRAIN PLAN
SYSTEM 7A & 7B – 4TH AVE QUINCE ST

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-11

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER — DATE

DESIGNED BY MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

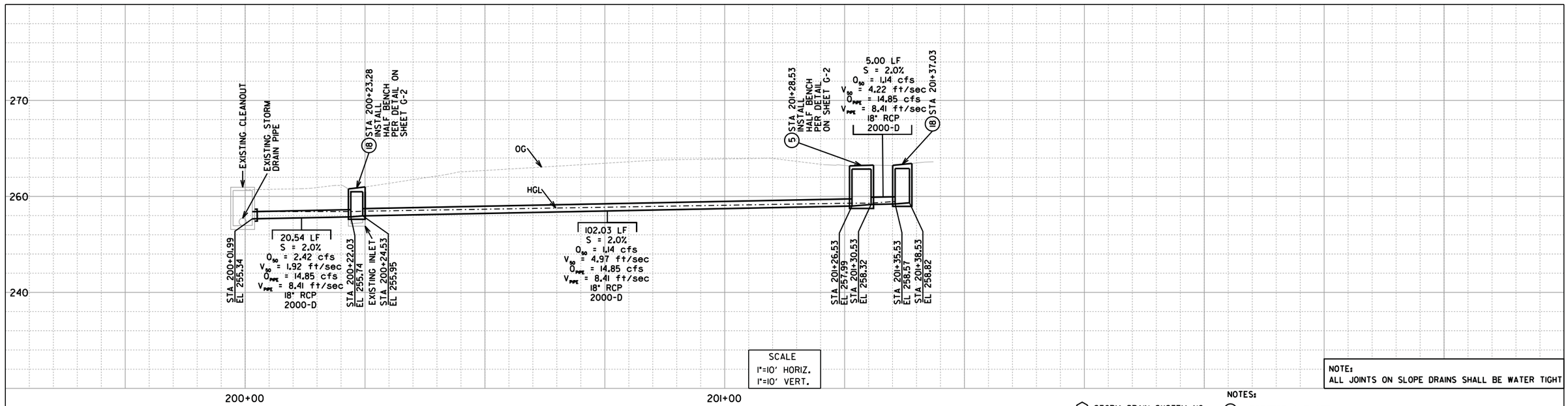
1846-6276
CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38321-14-D

MAPLE CANYON STORM DRAIN PROJECT

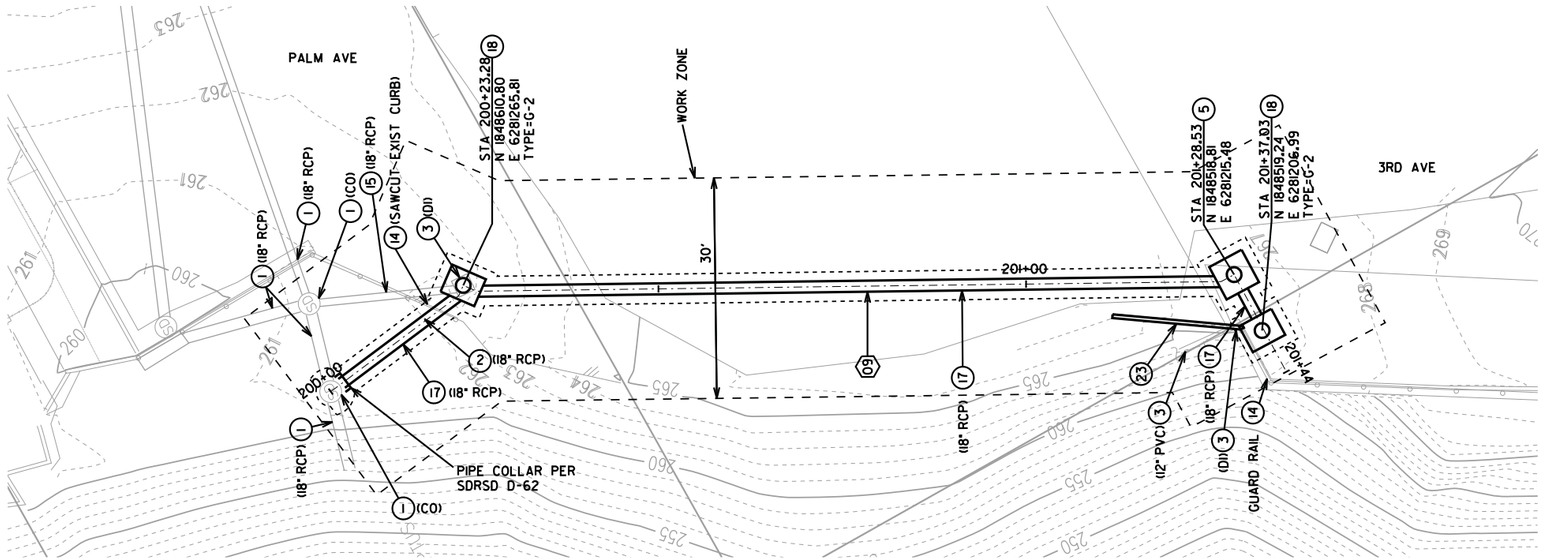
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pattonj
5/21/2015



SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.



STORM DRAIN PLAN
SYSTEM 09 – 3RD BETWEEN OLIVE & PALM

N
W E
S
0 10 20 30
SCALE 1"=10'

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

C–12

REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER — DATE

DESIGNED BY MERYL JIMENEZ PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM PROJECT ENGINEER

206-1719 CCS27 COORDINATE

1846-6276 CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38321–15–D

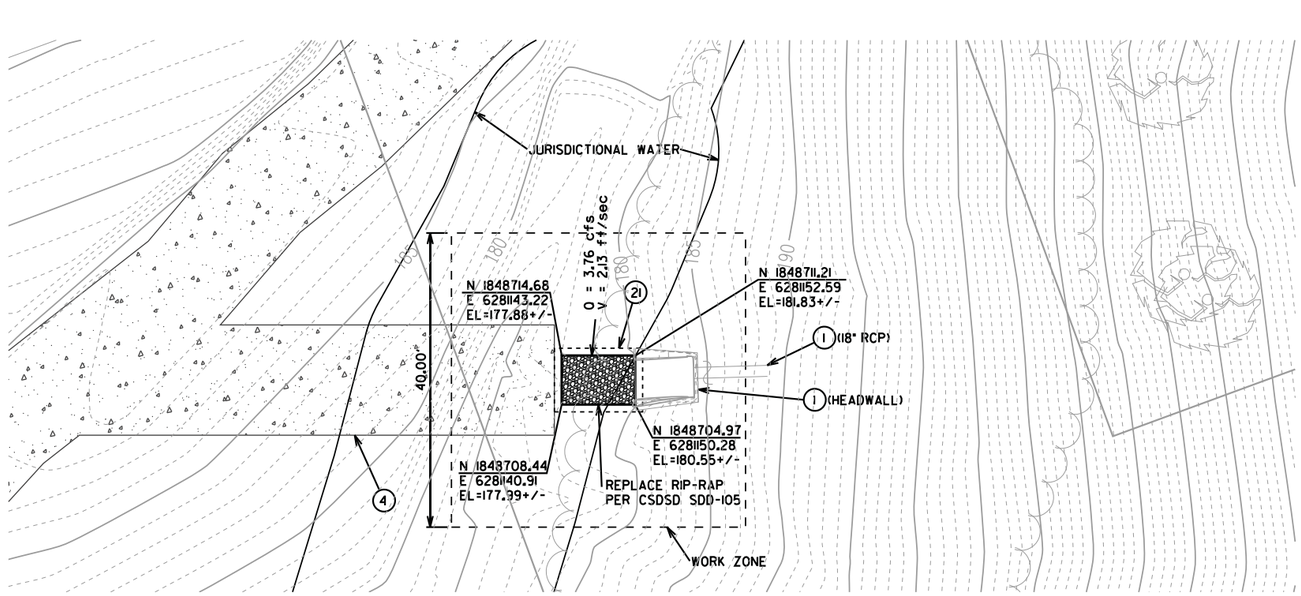
MAPLE CANYON STORM DRAIN PROJECT

\\G02FS02\1000_CAD\005_Hydrology-Drainage\Sheets\V103setup.dgn
jpthtoo
5/21/2015

SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

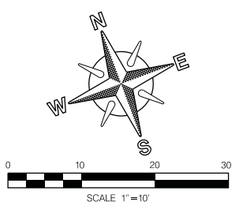


SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 08 – 3RD BETWEEN PALM & QUINCE

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C–13

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER — DATE

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

206-1719
CCS27 COORDINATE

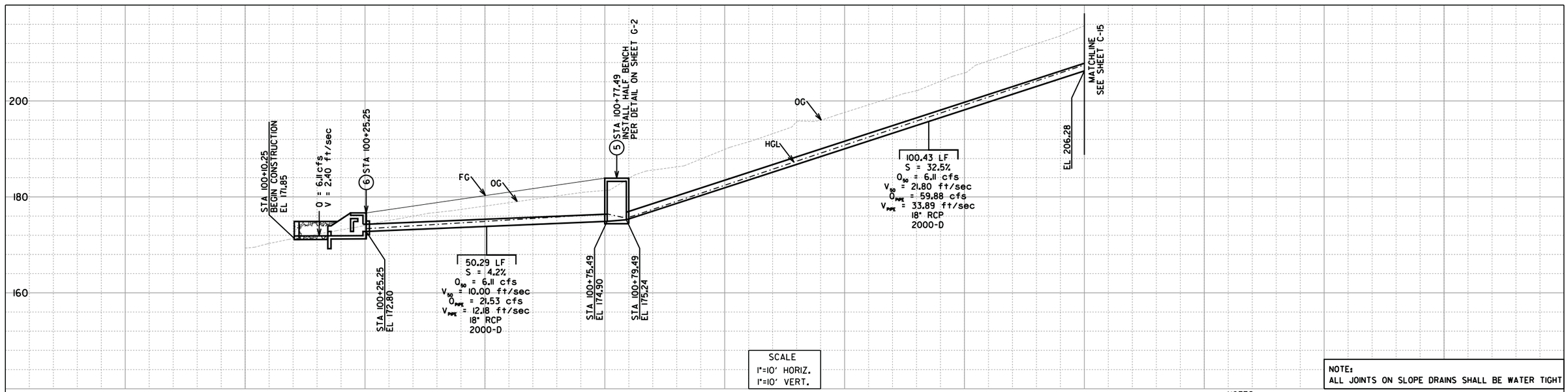
1846-6276
CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38321–16–D

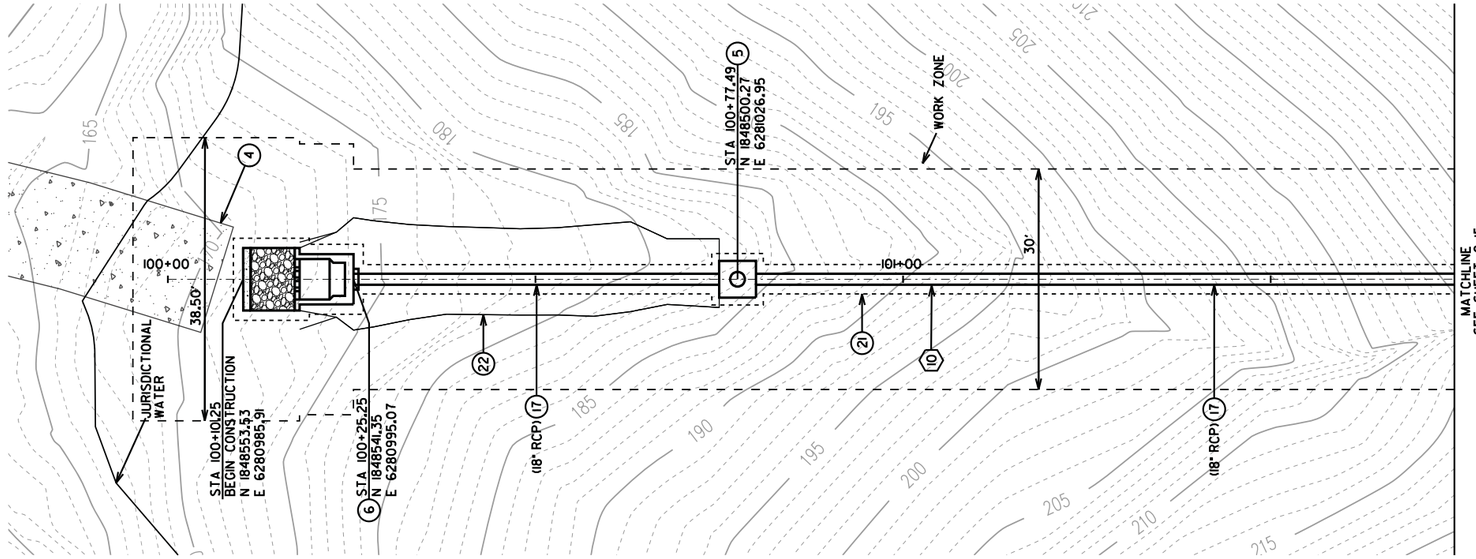
MAPLE CANYON STORM DRAIN PROJECT

5/21/2015 pdtteson]



SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 10 – 3RD & OLIVE (WEST OF 3RD)

SCALE 1" = 10'

⬡ STORM DRAIN SYSTEM NO.

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

C–14

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 22 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER DATE

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

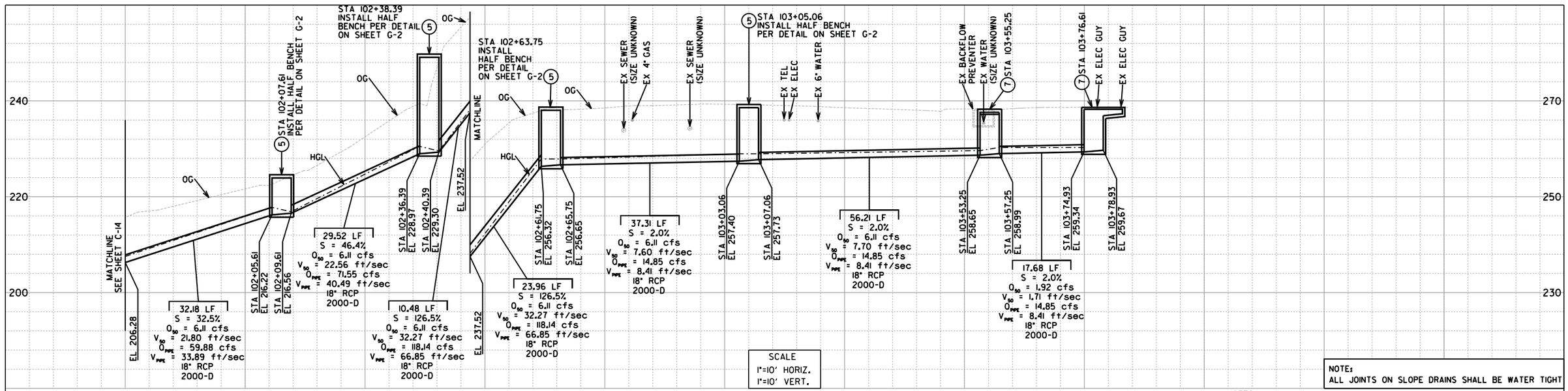
1846-6276
CCS83 COORDINATE

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

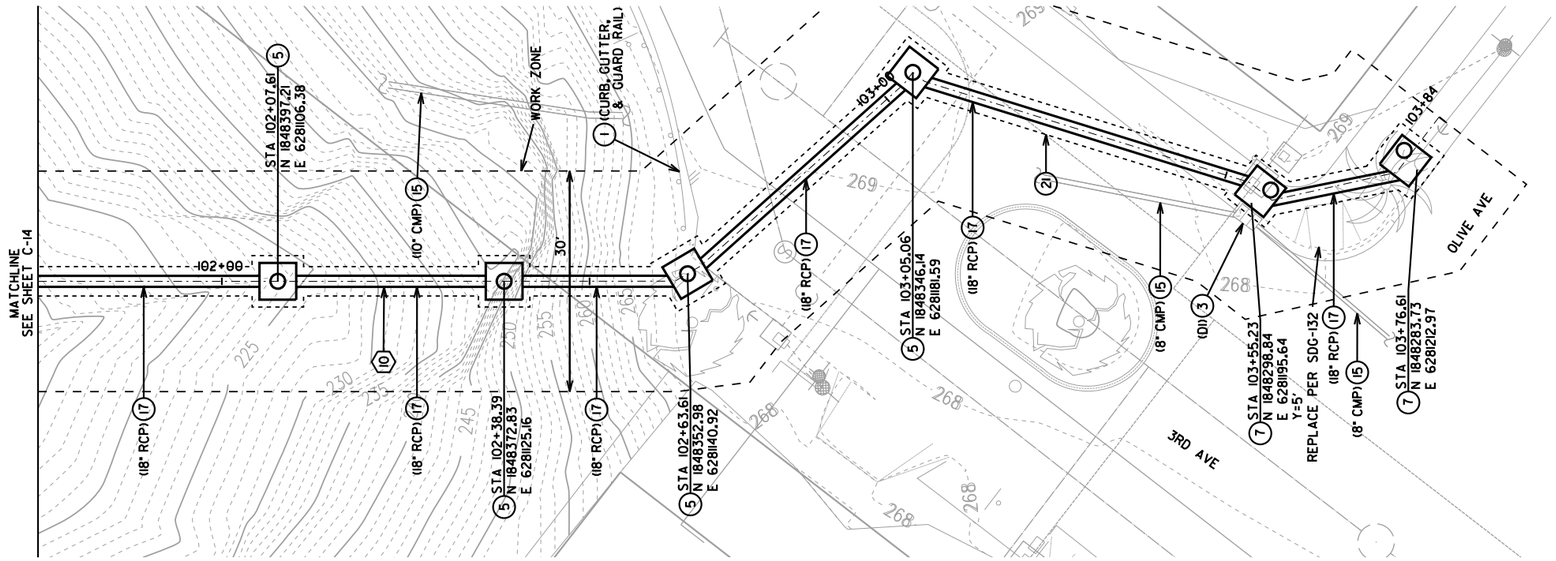
38321–17–D

MAPLE CANYON STORM DRAIN PROJECT

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jpillsbury
5/27/2015



NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



NOTES:

STORM DRAIN SYSTEM NO.

1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

C–15

MAPLE CANYON STORM DRAIN PROJECT

STORM DRAIN PLAN

SYSTEM 10 – 3RD & OLIVE (WEST OF 3RD)

SCALE 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 23 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER DATE

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

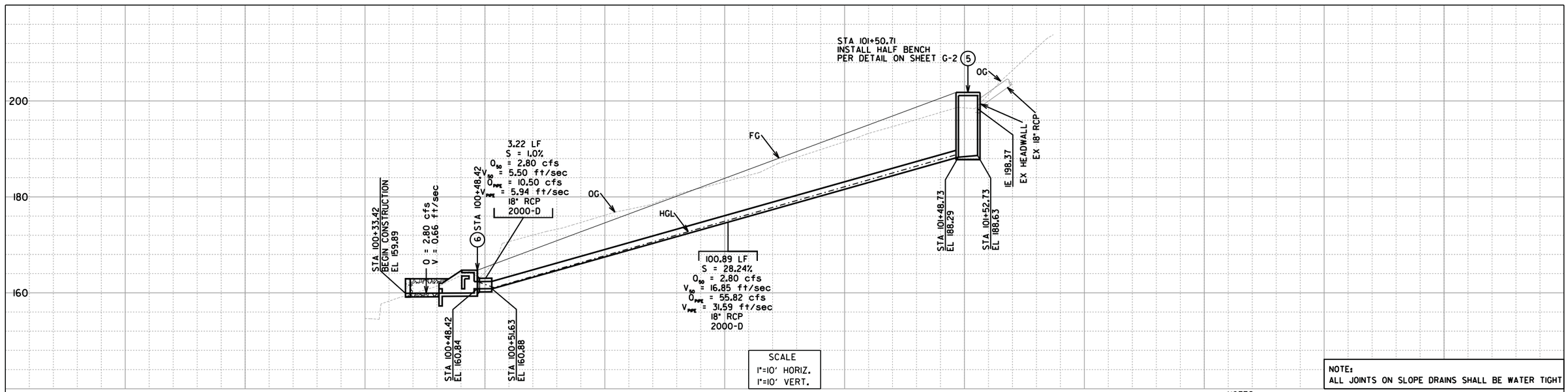
1846-6276
CCS83 COORDINATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

38321–18–D

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9/21/2015
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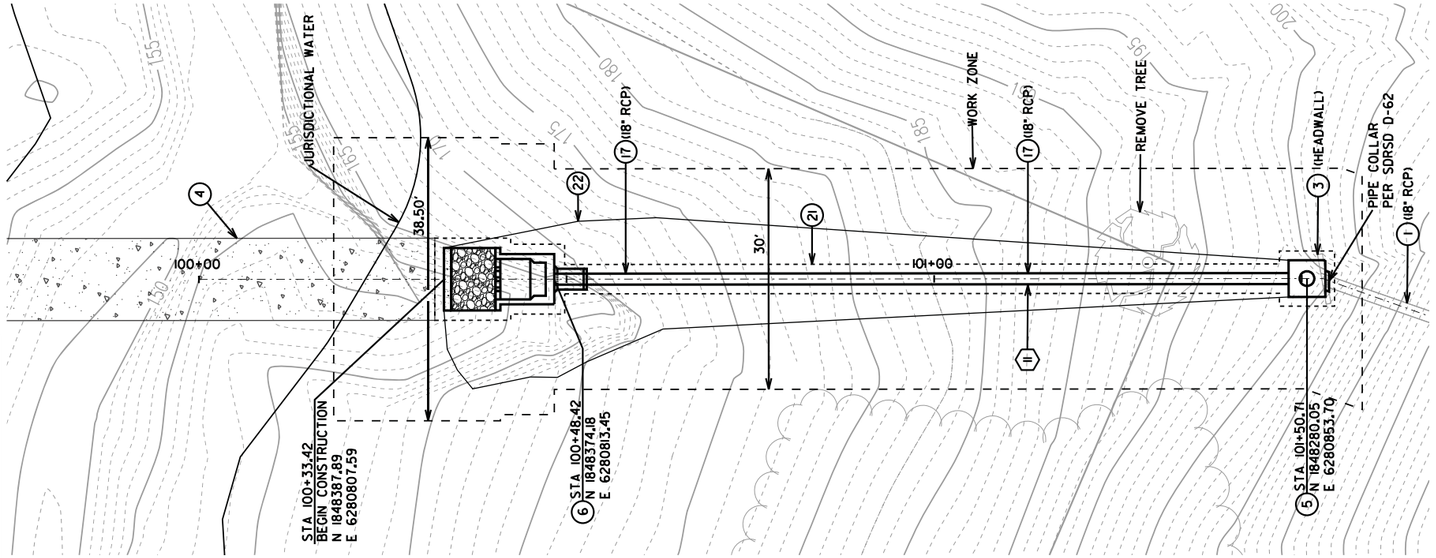


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

STORM DRAIN SYSTEM NO.

NOTES:

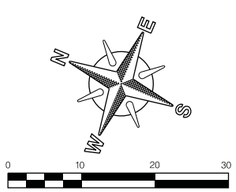
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 11 – 2ND & OLIVE



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

MAPLE CANYON STORM DRAIN PROJECT

C–16

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 24 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

DESIGNED BY
NICOLE SALEM
PROJECT ENGINEER

206-1719
CCS27 COORDINATE

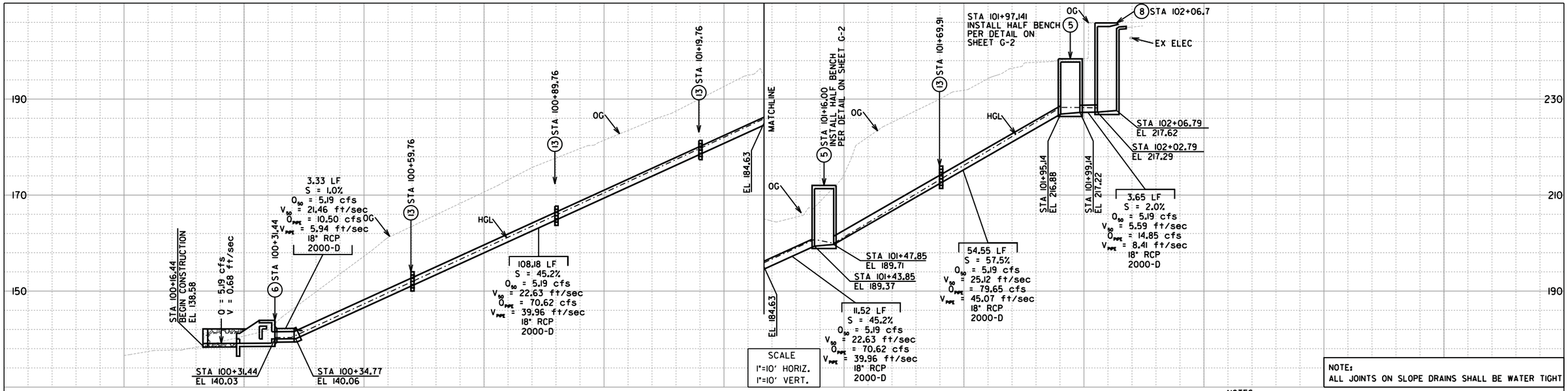
1846-6276
CCS83 COORDINATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321–19–D

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5/27/2015
pdtlabor)

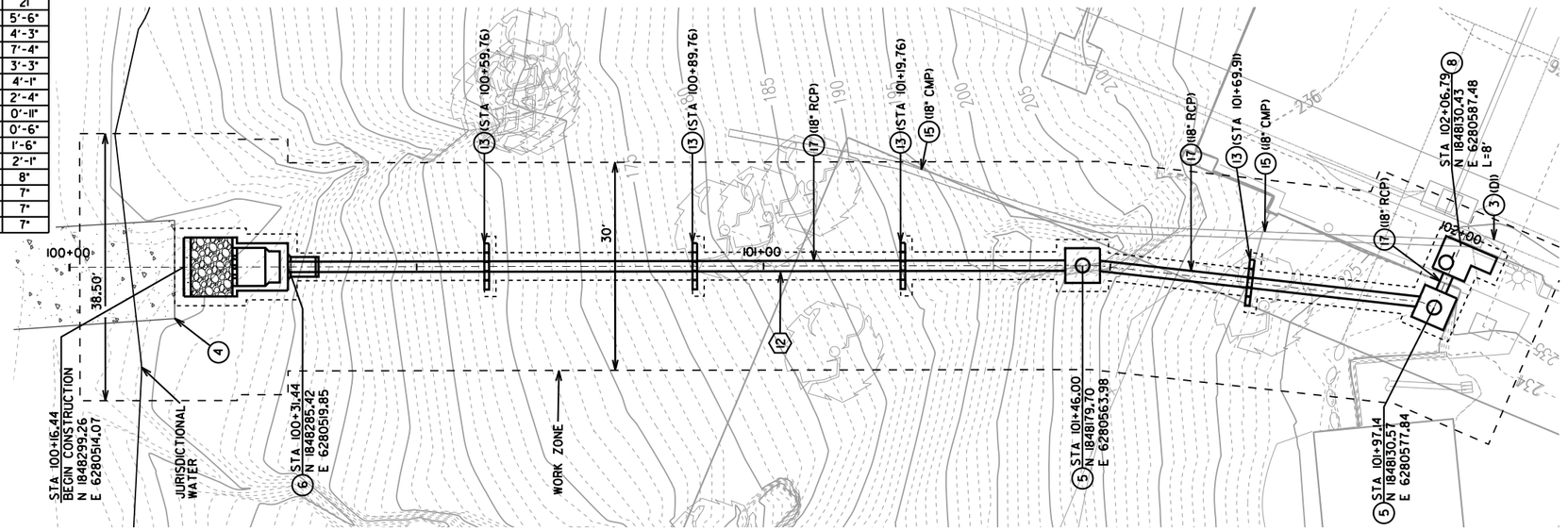


SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

SDD-105	
PIPE DIA (in)	18
AREA (sq ft)	1.77
MAX Q (cfs)	21
W	5'-6"
H	4'-3"
L	7'-4"
a	3'-3"
b	4'-1"
c	2'-4"
d	0'-11"
e	0'-6"
f	1'-6"
g	2'-1"
Tf	8"
Tb	7"
Tw	7"
Ta	7"



SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 12 – 1ST AVE BRIDGE DRAIN

SCALE 1"=10'

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C–17

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED FOR CITY ENGINEER ____ DATE ____

SUBMITTED BY: MERYL JIMENEZ, PROJECT MANAGER

CHECKED BY: NICOLE SALEM, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

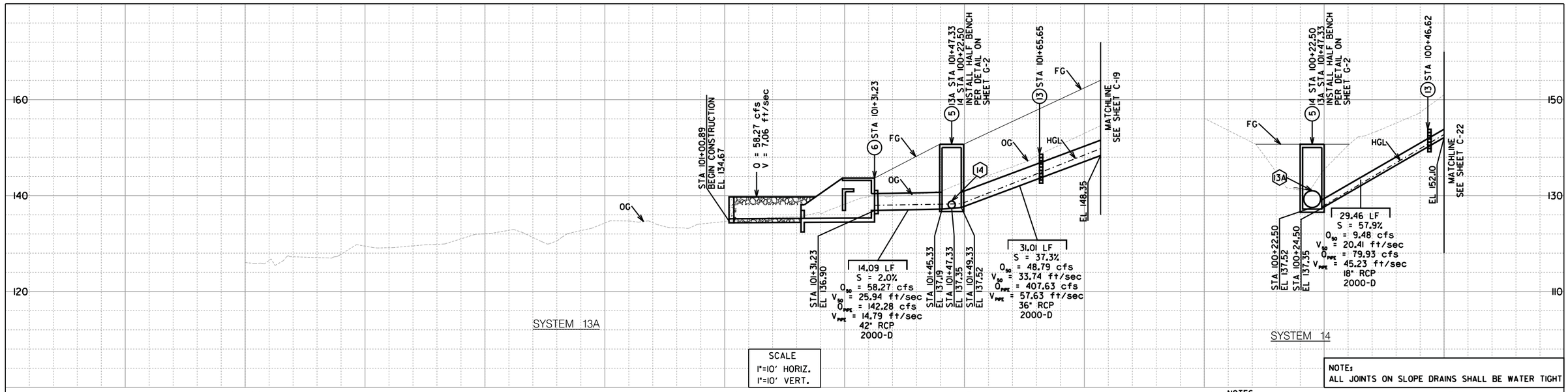
206-1719 CCS27 COORDINATE
1846-6276 CCS83 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

38321–20–D

MAPLE CANYON STORM DRAIN PROJECT

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5/21/2015
jpithoud

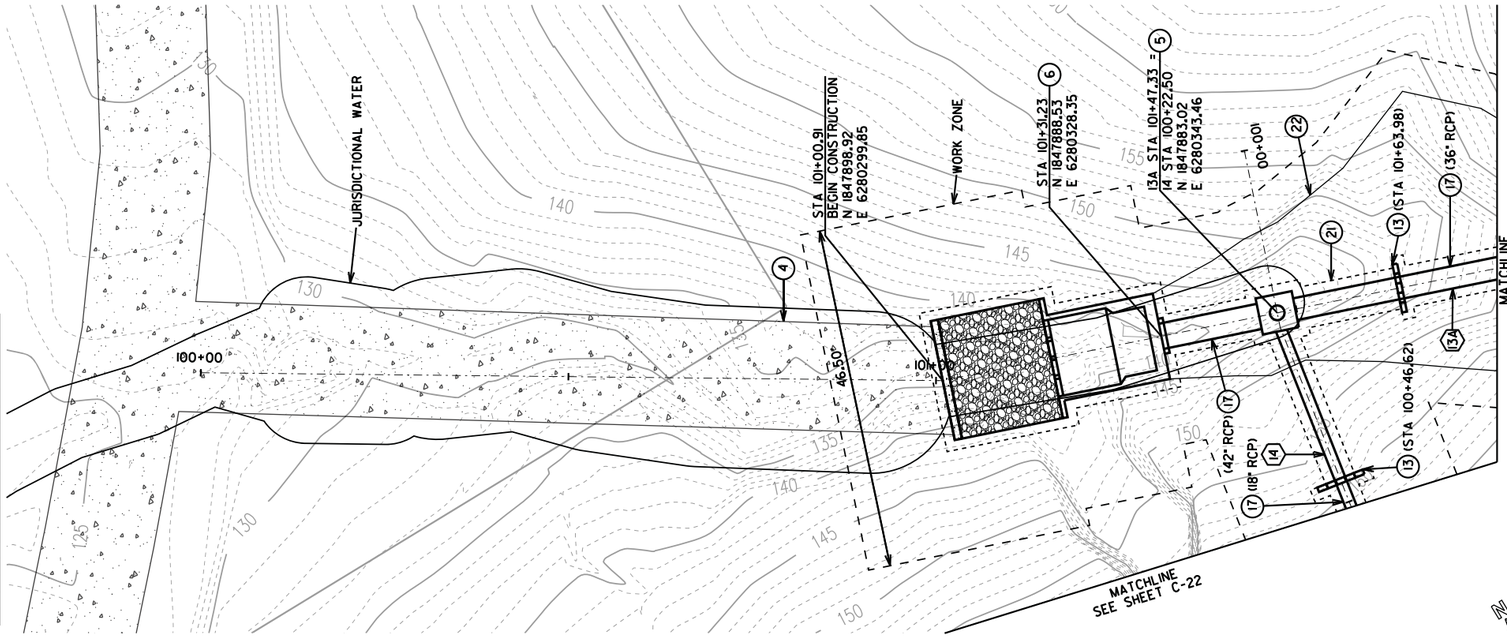


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

NOTES:

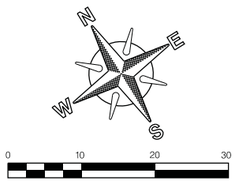
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



SDD-105	
PIPE DIA (in)	42
AREA (sq ft)	9.62
MAX Q (cfs)	115
W	10'-6"
H	8'-0"
L	12'-4"
a	5'-3"
b	7'-1"
c	3'-10"
d	1'-7"
e	0'-8"
f	3'-0"
g	3'-6"
Tf	10"
Tb	9 1/2"
Tw	9 1/2"
Ta	8"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	12"

STORM DRAIN PLAN
SYSTEM 13A – 1ST & NUTMEG
SYSTEM 14 – FRONT STREET DRAIN



REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C–18

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET XX OF XX SHEETS

WBS B-12040

APPROVED FOR CITY ENGINEER ____ DATE ____

DESIGNED MERYL JIMENEZ PROJECT MANAGER

CHECKED BY NICOLE SALEM PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

206-1719 CCS27 COORDINATE

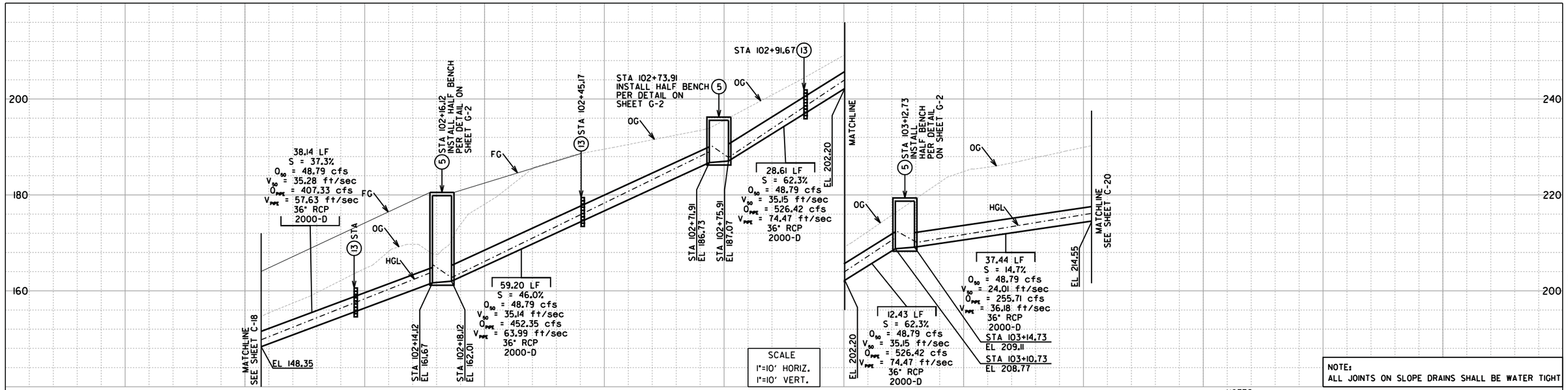
1846-6276 CCS83 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

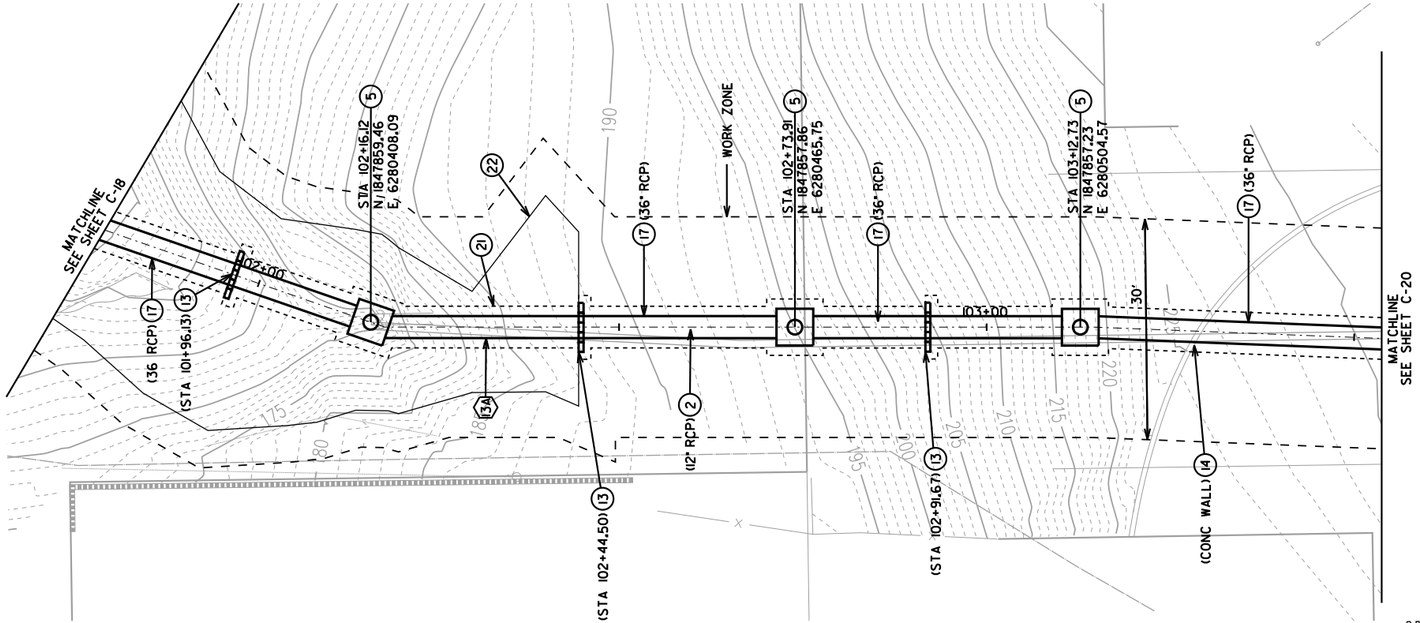
38321–21–D

MAPLE CANYON STORM DRAIN PROJECT

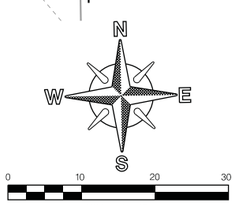
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5/21/2015
pdmccoy



NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



STORM DRAIN PLAN
SYSTEM 13A – 1ST & NUTMEG



STORM DRAIN SYSTEM NO.

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

C–19

MAPLE CANYON STORM DRAIN PROJECT

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 27 OF XX SHEETS

WBS B-12040

APPROVED FOR CITY ENGINEER ____ DATE ____

SUBMITTED BY MERYL JIMENEZ PROJECT MANAGER

DESIGNED BY NICOLE SALEM PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

206-1719 CCS27 COORDINATE

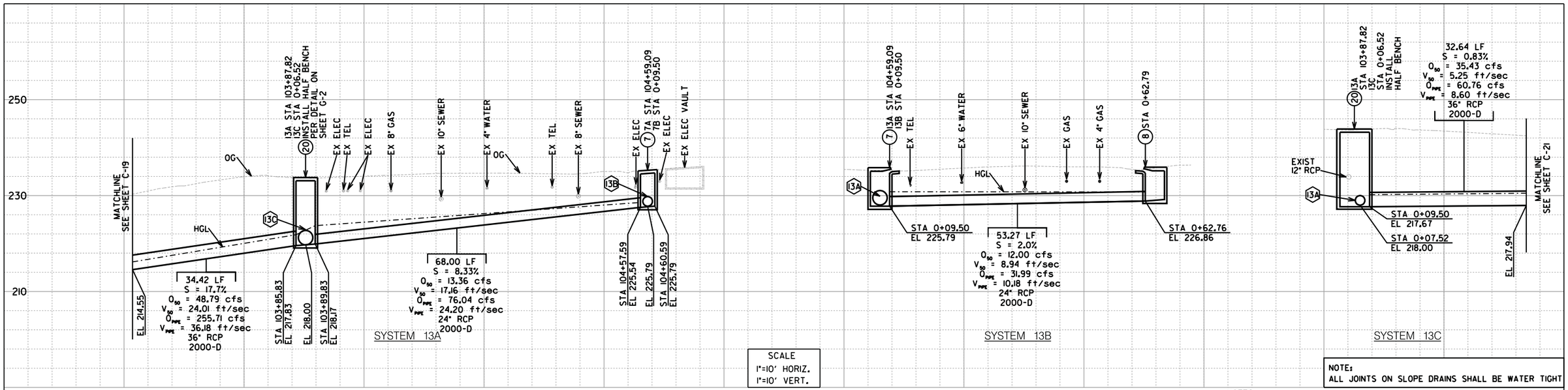
1846-6276 CCS83 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

38321–22–D

REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

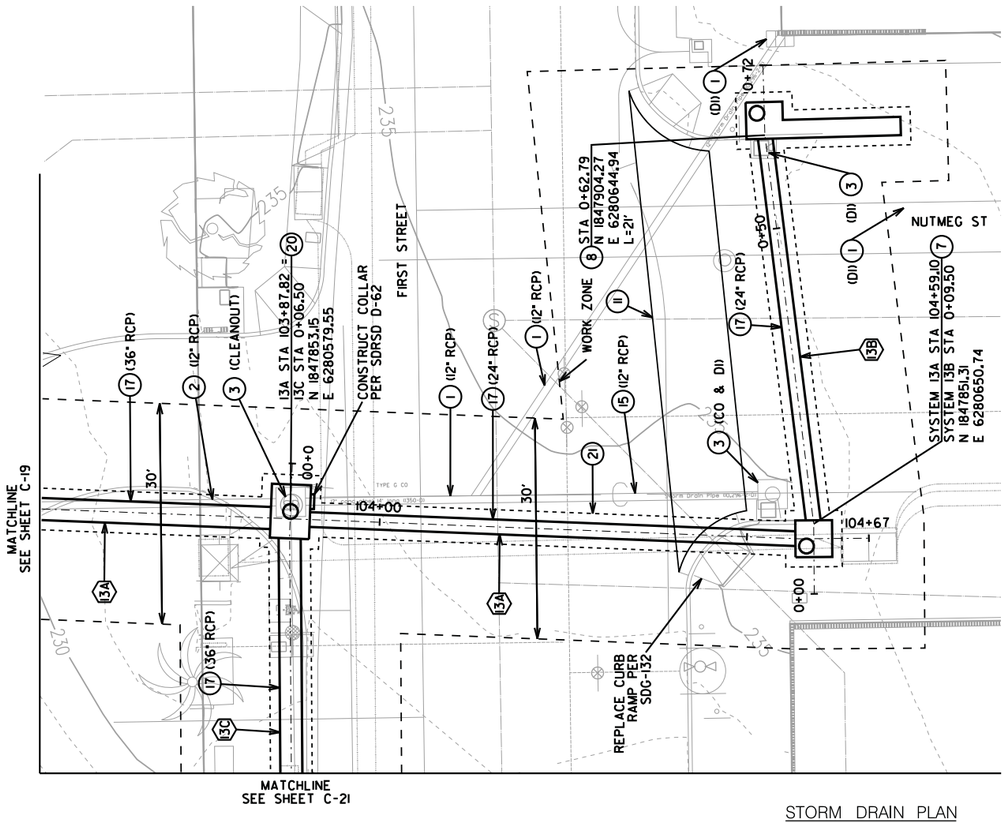
\\GDZFSP1\DD_CAD\05_Hydrology-Drainage\Sheets\105stetusdgn
5/25/2015
pdtibbett



SCALE
1"=10' HORIZ.
1"=10' VERT.

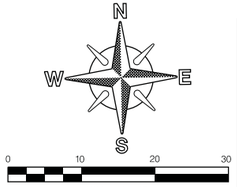
⬡ STORM DRAIN SYSTEM NO.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



STORM DRAIN PLAN
SYSTEM 13A, 13B, 13C – 1ST & NUTMEG

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



REGISTERED PROFESSIONAL ENGINEER
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No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-20

PLANS FOR THE CONSTRUCTION OF MAPLE CANYON STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 28 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

DESIGNED BY MERYL JIMENEZ PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM PROJECT ENGINEER

206-1719 CCS27 COORDINATE

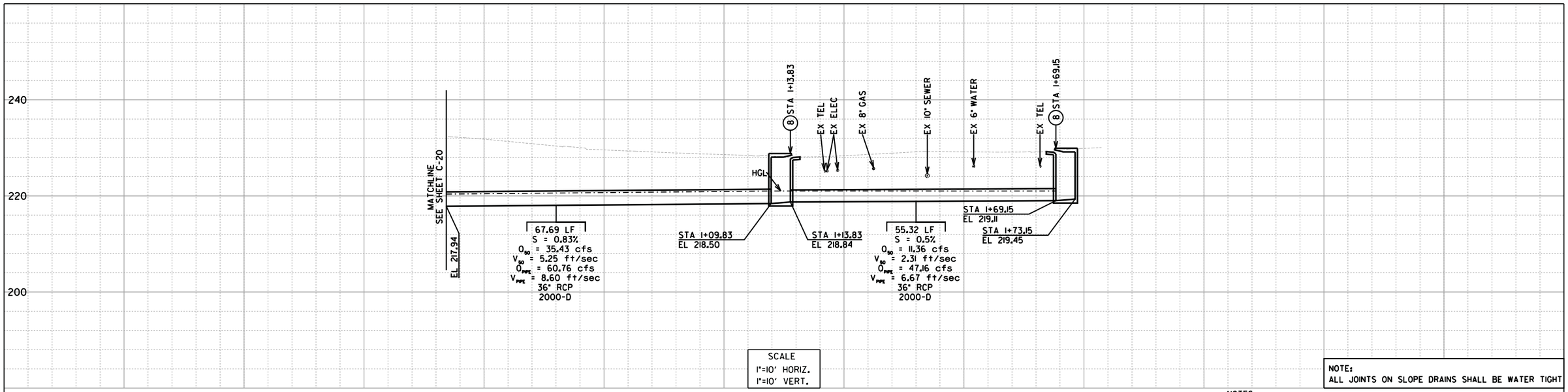
1846-6276 CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321-23-D

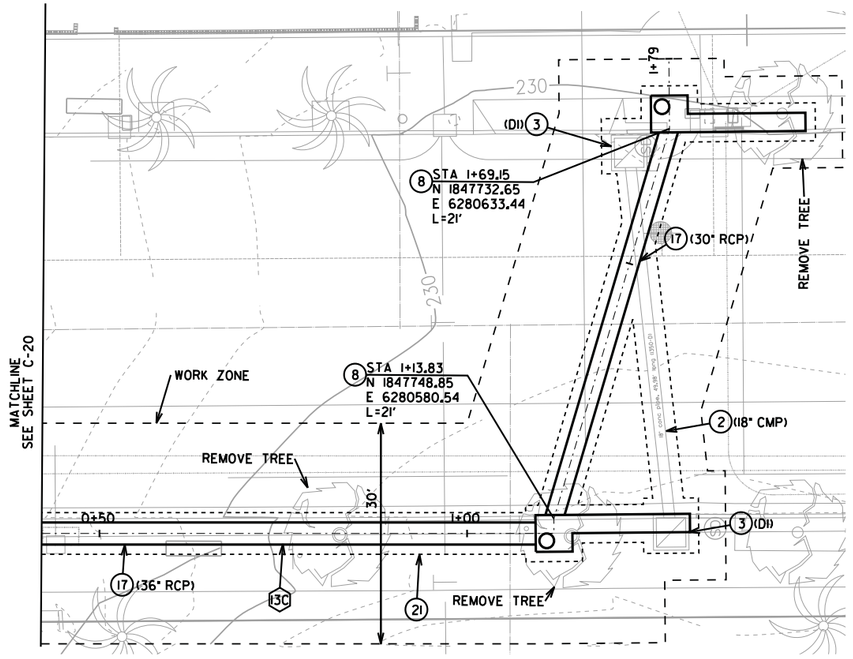
MAPLE CANYON STORM DRAIN PROJECT

5/21/2015 pattison



SCALE
1"=10' HORIZ.
1"=10' VERT.

NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

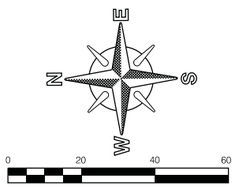


STORM DRAIN PLAN
SYSTEM 13C – 1ST & NUTMEG

STORM DRAIN SYSTEM NO.

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151

C-21



REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 29 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER — DATE

DESIGNED BY MERYL JIMENEZ, PROJECT MANAGER
CHECKED BY NICOLE SALEM, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

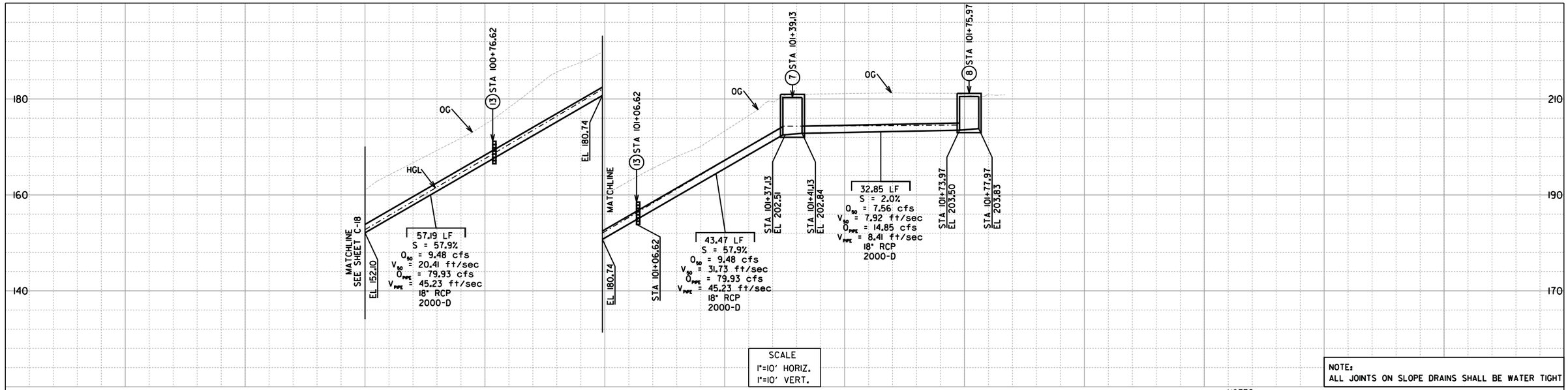
206-1719 CCS27 COORDINATE
1846-6276 CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38321-24-D

MAPLE CANYON STORM DRAIN PROJECT

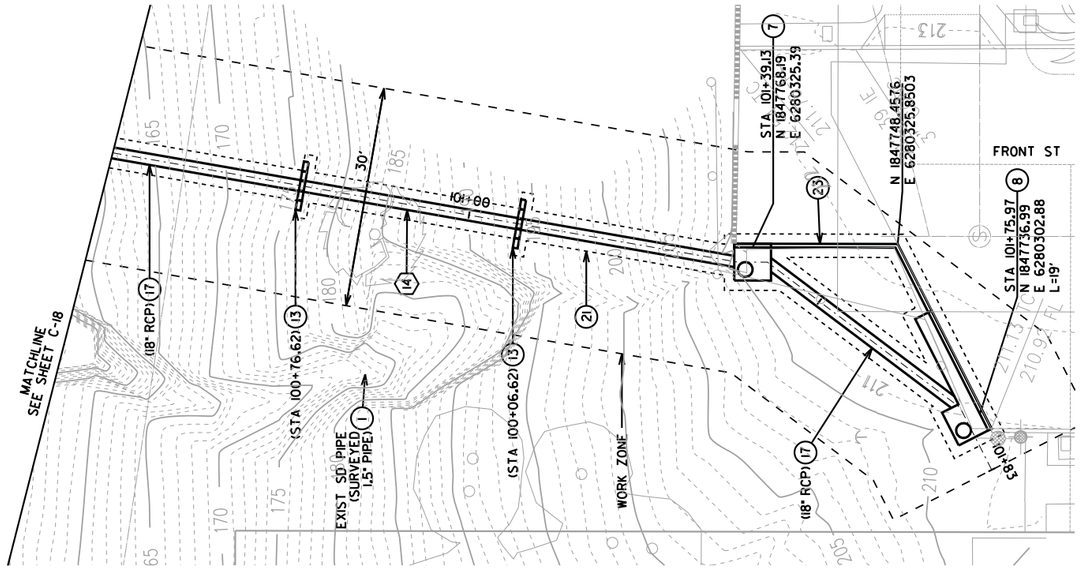
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9/21/2015



SCALE
1"=10' HORIZ.
1"=10' VERT.

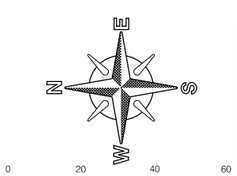
NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

13 STORM DRAIN SYSTEM NO.



STORM DRAIN PLAN
SYSTEM 14 – FRONT STREET DRAIN

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-22

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 30 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER DATE

SUBMITTED BY
MERYL JIMENEZ
PROJECT MANAGER

CHECKED BY
NICOLE SALEM
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

206-1713
CCS27 COORDINATE

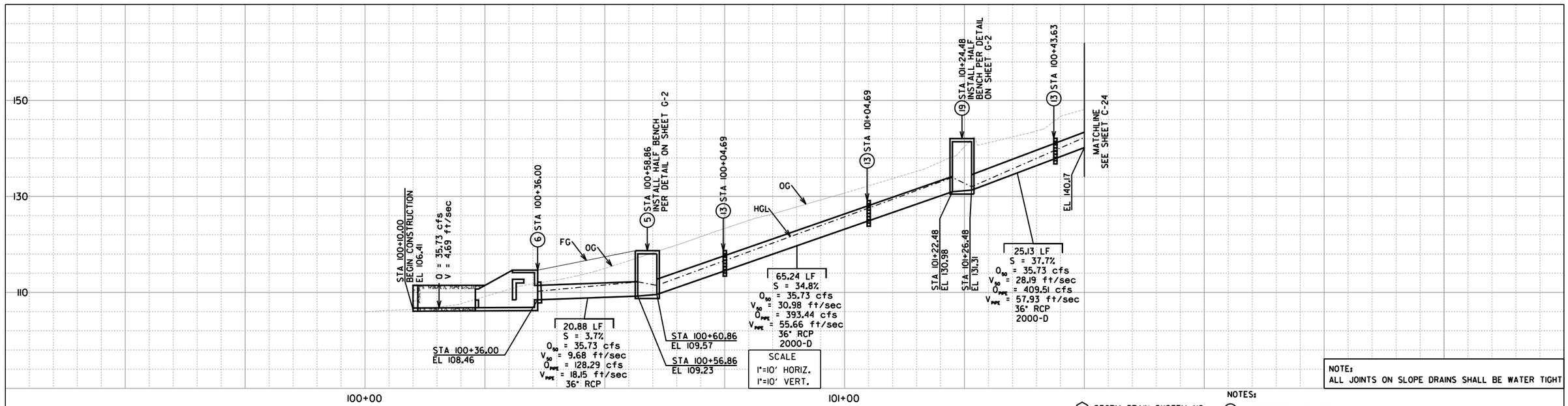
1846-6273
CCS83 COORDINATE

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

38321-25-D

MAPLE CANYON STORM DRAIN PROJECT

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pmason
5/27/2015

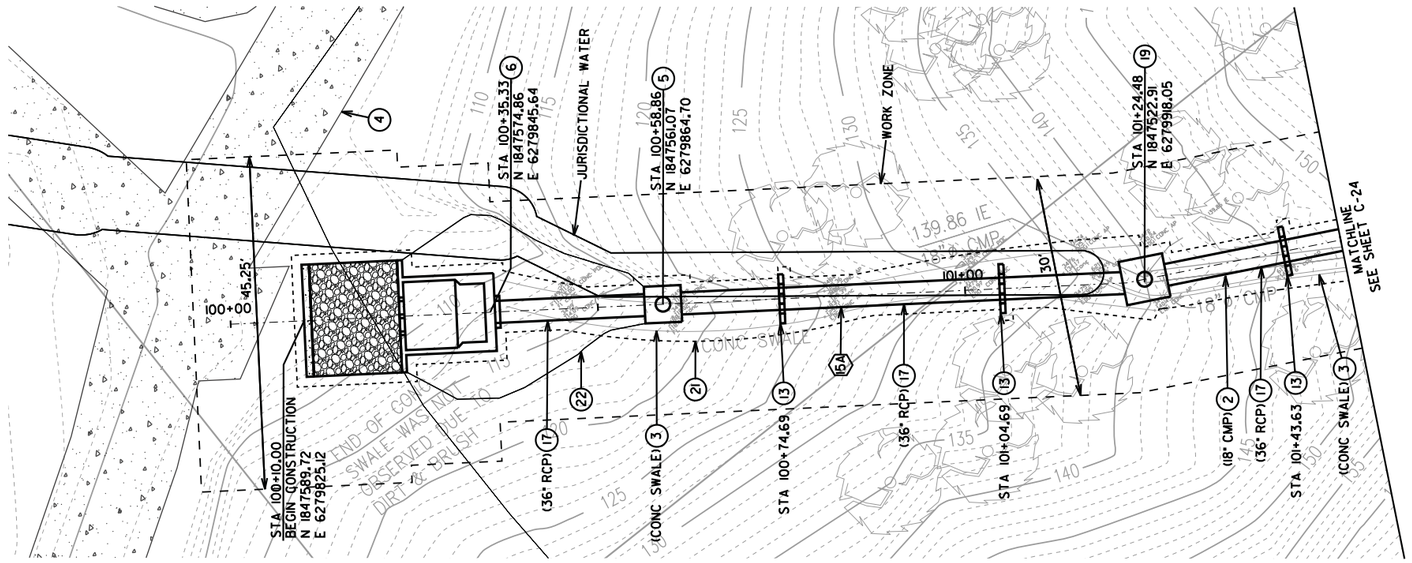


NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT

⬡ STORM DRAIN SYSTEM NO.

NOTES:

1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



SDD-105	
PIPE DIA (in)	36
AREA (sq ft)	7.07
MAX Q (cfs)	85
W	9'-3"
H	7'-3"
L	12'-4"
a	5'-3"
b	7'-1"
c	3'-10"
d	1'-7"
e	0'-8"
f	3'-0"
g	3'-6"
Tf	10"
Tb	9 1/2"
Tw	9 1/2"
Ta	8"

SDD-105				
ROCK CLASSIFICATION	ROCK THICKNESS	FILTER MATERIAL	FILTER LAYERS	FILTER THICKNESS
NO. 2 BACKING	1.1'	CAB	1	8"

STORM DRAIN PLAN
SYSTEM 15 – ALBATROSS & MAPLE

0 20 40 60
SCALE 1"=20'

REGISTERED PROFESSIONAL ENGINEER
KERI H. CANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

MAPLE CANYON STORM DRAIN PROJECT

C-23

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 31 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER ____ DATE ____

DESIGNED BY MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM
PROJECT ENGINEER

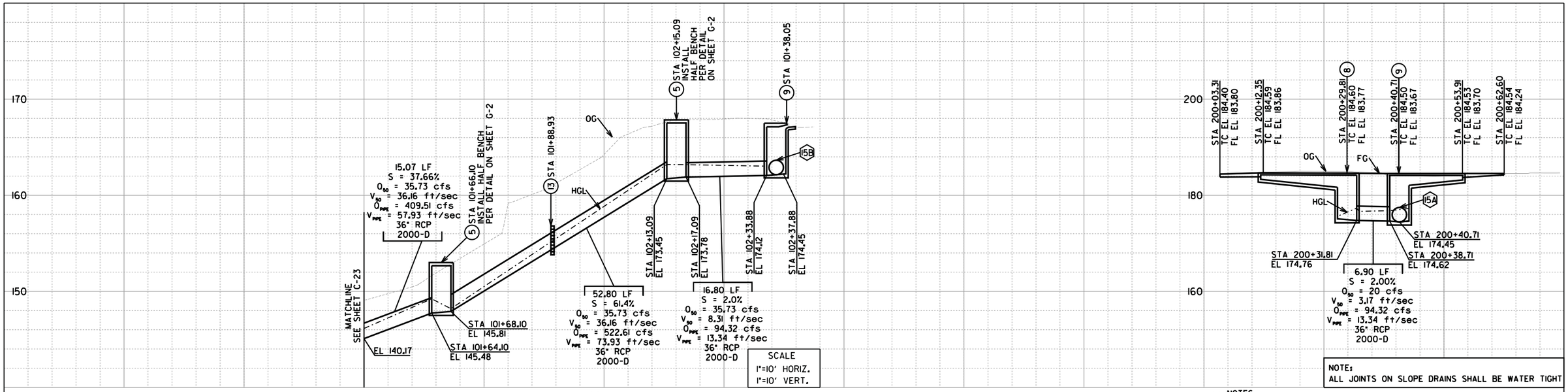
206-1713
CCS27 COORDINATE

1846-6273
CCS83 COORDINATE

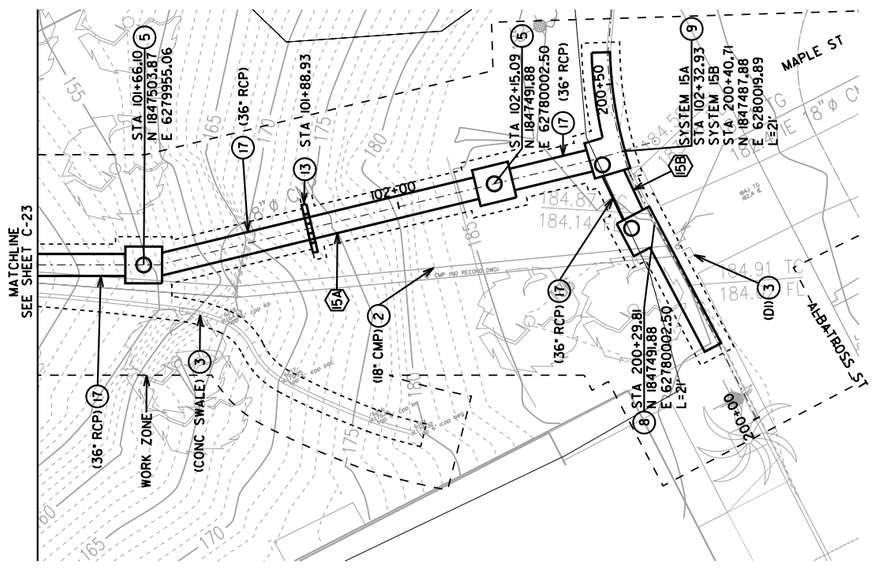
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INSPECTOR ____ DATE COMPLETED ____

38321-26-D

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5/21/2015
pjohnson



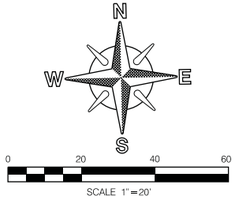
NOTE:
ALL JOINTS ON SLOPE DRAINS SHALL BE WATER TIGHT



STORM DRAIN PLAN
SYSTEM 15 – ALBATROSS & MAPLE

⬡ STORM DRAIN SYSTEM NO.

NOTES:
1. PROTECT IN PLACE
2. REMOVE EXIST STORM DRAIN PIPE
3. REMOVE PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
4. TEMPORARY ACCESS ROAD (LEVELED NATIVE MATERIAL)
5. CONSTRUCT CLEANOUT TYPE A-4, PER SDRSD D-9
6. CONSTRUCT CONCRETE ENERGY DISSIPATOR, PER CSDSD SDD-105
7. CONSTRUCT CURB INLET TYPE B, PER CSDSD SDD-116
8. CONSTRUCT CURB INLET TYPE B-1, PER CSDSD SDD-116
9. CONSTRUCT CURB INLET TYPE B-2, PER CSDSD SDD-116
10. NOT USED
11. CONSTRUCT CROSS GUTTER, PER CSDSD SDG-157
12. CONSTRUCT CURB INLET TYPE A-1, PER CSDSD SDD-115
13. CONSTRUCT CONCRETE ANCHOR, PER CSDSD SDS-114
14. REPLACE IN KIND
15. ABANDON PER CITY OF SAN DIEGO "WHITEBOOK" 306-5
16. NOT USED
17. CONSTRUCT NEW STORM DRAIN PIPE
18. CONSTRUCT CATCH BASIN TYPE 1, PER SDRSD D-29
19. CONSTRUCT CLEANOUT TYPE A-5, PER SDRSD D-9
20. CONSTRUCT CLEANOUT TYPE A-6, PER SDRSD D-9
21. TRENCH LIMITS
22. GRADING LIMITS
23. CONSTRUCT TYPE G CURB & GUTTER PER CSDSD SDG-151



REGISTERED PROFESSIONAL ENGINEER
KERI H. GANNON
No. 68877
Exp. 09/30/17
CIVIL
STATE OF CALIFORNIA

C-24

PLANS FOR THE CONSTRUCTION OF
MAPLE CANYON
STORM DRAIN REPLACEMENT
STORM DRAIN PLAN AND PROFILE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 32 OF XX SHEETS

WBS B-12040

APPROVED
FOR CITY ENGINEER _____ DATE _____

DESIGNED BY MERYL JIMENEZ
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	AECOM			

CHECKED BY NICOLE SALEM
PROJECT ENGINEER

206-1713
CCS27 COORDINATE

1846-6273
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

38321-27-D

MAPLE CANYON STORM DRAIN PROJECT

\\6029752\1000_CAD\005-Hydrology-Drainage\Sheets\05sseludgn
patheaj
5/31/2016

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