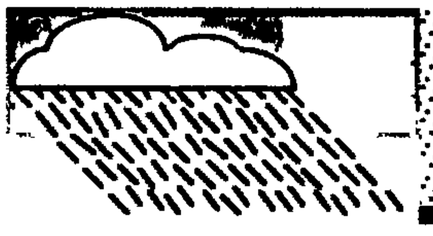
Jefferson Commons II

ALBUQUERQUE, NM

SUBDIVISION OF LOTS 1 - 6

- Background
- Basin Analysis
- Summary of Results
- Storm Sewer System
- Plat



Drainage Report

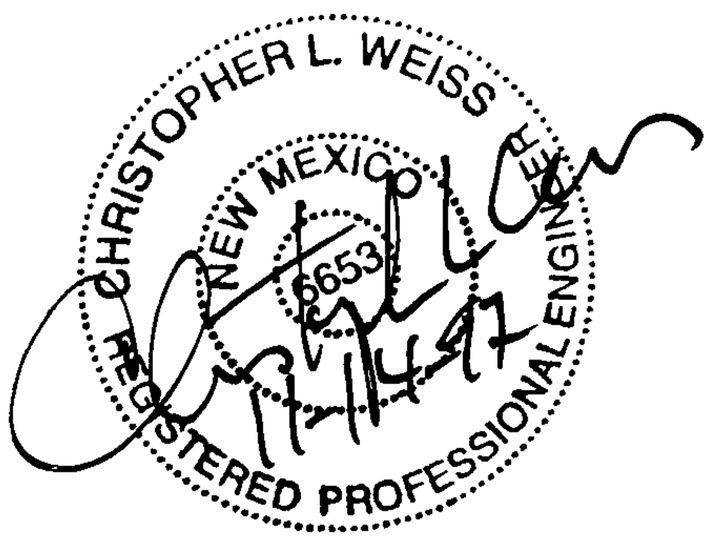
November 1997

C. L. Weiss Engineering, Inc.

Jefferson Commons II

ALBUQUERQUE, NM

SUBDIVISION OF LOTS 1 - 6



Drainage Report

November 1997

C. L. Weiss Engineering, Inc.

Background

Existing Site

The Jefferson Commons II site is located north of I-25, surrounded by Jefferson St. on the east, Singer Blvd. on the north and Office Blvd. on the west. The 35 acre site is one of the few remaining undeveloped tracts in the immediate area (See Panorama Photo - Site Photos). No improvements have been made to alter the original topography, except for some light grading for a baseball field located in the northern portion of the site.

The SS Map shows the existing topography, which reflects the historic drainage paths formed by offsite/onsite flows. Successive upstream street and SS improvements have intercepted all contributing basins and have isolated the site from offsite storm runoff.

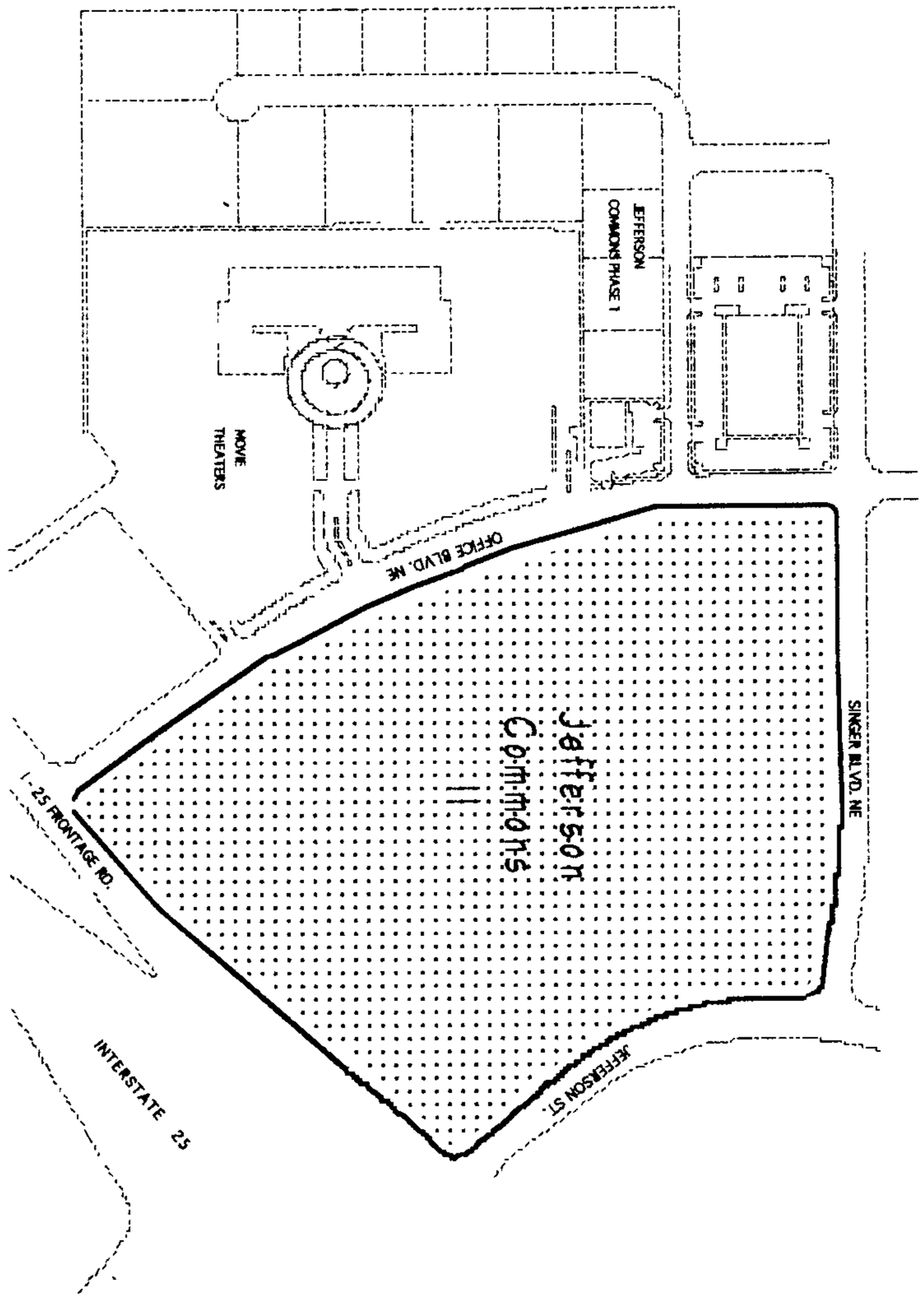
- When Jefferson Street was originally named Kircher Ave., the street alignment gave priority to funneling traffic west onto Singer Blvd., with Kircher Ave. forming a "T" intersection for northbound traffic. Offsite flows previously flooded this intersection, some of which followed Singer Blvd. to the west and some of which crossed the site to flow toward the Vinyard Arroyo. When Kircher Ave. was realigned to give priority to northbound traffic and renamed Jefferson Street, Singer Blvd. became the "T" intersection, with a high point constructed just west of the intersection to serve as a water block for Singer Blvd. Now flows collecting in the Jefferson St./Singer Blvd. intersection are surface routed a short distance south by the Jefferson St. curb and gutter to a series of inlets for capture into a SS system which outflows into the Vineyard Arroyo (See Photo #9 for Jefferson St. inlets). All offsite flows which previously drained down Singer Blvd. or crossed the site are presently intercepted by these inlets.

- The SS system is situated in an easement within the site, generally following the alignment of the Jefferson St. and I-25 Frontage roads before turning north at Office Blvd., and turning west again into the Vineyard Arroyo (See SS Map). This SS system was funded and constructed by AMAFCA and designed by Greiner Engineers (Reference: AMAFCA Vineyard Arroyo). The open channel portion of the Vineyard Arroyo at the outfall of the SS has been recently improved from an unlined arroyo to a concrete lined trapezoidal section, extending from the box culvert to the North Diversion Channel inlet (See Photos #3 & 4)

Storm runoff leaving the site historically found outflows into the North Diversion Channel at either the Vineyard Arroyo junction or other inlets to the north. Downstream developments have now routed all flows to defined points at the outfall from Commons Ave. and the Vineyard Arroyo

- Commons Ave. Outlet: Flows from Singer Blvd., and adjacent businesses along the north side of the street, travel west in Singer Blvd. to the intersection with Office Blvd., then south in Office Blvd. to the intersection with Commons Ave. Street flows combine with drainage from the northern portion of the site, which crosses at a dip section in Office Blvd. at the intersection with Commons Ave. (See Photos # 5 &6). Flows are then routed west within Commons Ave. to a rundown inlet into the North Diversion Channel (See Photos #7 & 8);

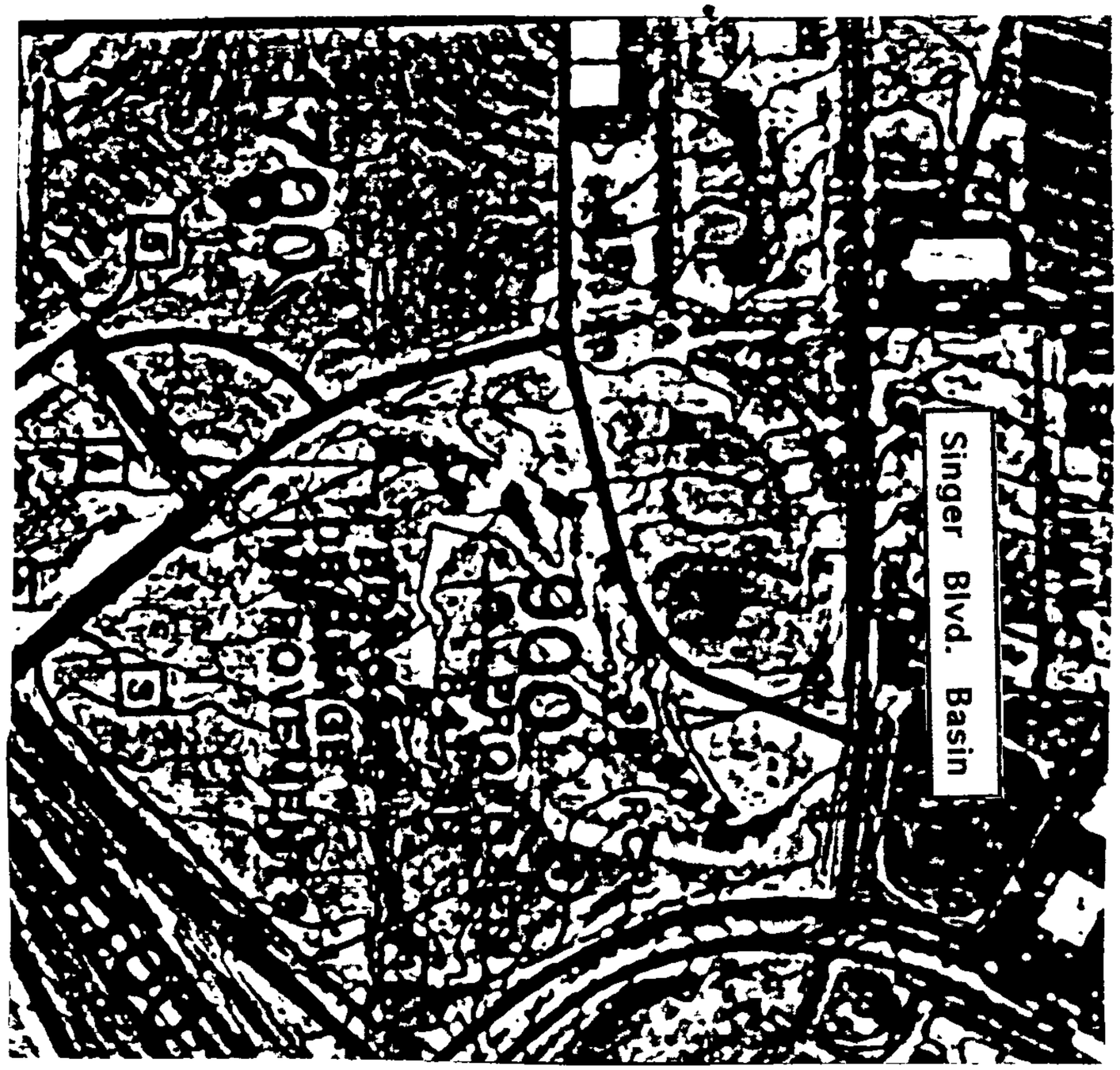
- Vineyard Arroyo. The remaining site drainage is picked up at an existing pipe culvert in the SW region of the site on the east side of Office Blvd. (See Photo #2). This pipe is connected to the SS box culvert which drains to the Vineyard Arroyo. Storm drainage from the site either follows the existing arroyos to the pipe or is intercepted by the Office Blvd. roadside swales. Street flows are picked up by curb and gutter installed on the west side of the street and routed to a SS inlet located north of the culvert crossing point (See Photo #1).



Site Map

(F-17-Z)

Singer Blvd. Basin - Front area of adjoining businesses - looking west



Aerial Map

(From Greiner Report)

Jefferson Commons II

SINGER BLVD. NE

NTS

EXISTING SS INLETS

EXISTING 72" RCP

JEFFERSON ST.

Jefferson Commons II

OFFICE BLVD. NE

EXISTING 72" RCP

DRAINAGE EASEMENT

EXISTING 84" RCP

60" CMP INLET

EXISTING 12'x8' CBC DRAINS TO VINEYARD ARROYO

EXISTING 10'x7' CBC

INTERSTATE 25

3-42" RCP's

VINEYARD PCC LINED CHANNEL

I25 FRONTAGE RD.

JEFFERSON COMMONS PHASE

PARKING

MOVIE THEATERS

PARKING

SS Map

Basin Analysis

Proposed Site

The development of the Jefferson Commons II site will proceed in stages as each lot within the overall tract is defined by the purchaser's needs, as to building shape and space requirements. Each drainage basin will be defined by the platted lot dimensions, with each lot draining to specific easements providing drainage access across adjoining areas. At this stage, the Site Plan for Subdivision has defined the overall intent as to general land use for Lots 1 - 5 (See Basin Map). More specifically as to land use, Lot 1 is planned for a hotel, Lots 2 through 4 will be occupied by restaurants, while Lots 5 and 6 will be marketed for office clusters. Lots 3 and 5 will be the first two areas to be developed, and as such, have specific building outlines, finished floor elevations and traffic layouts established. Regarding traffic patterns, the office tracts will be separated from the restaurant/hotel area by a 12' wide landscaped buffer zone, with vehicular access crossing at only a few controlled locations.

The land use densities have been established based on the COA requirements for building space, parking requirements and landscaping ratios. Essentially, a ratio of 20% (Land Treatment B) previous and 80% (Land Treatment D) impervious is a realistic design goal. Referencing the Greiner analysis for the Digital Tract A, the anticipated developed flow rate of 127 cfs was generated based on 0% Land Treatment A, 20% Land Treatment B, and 10% Land Treatment C and 70% Land Treatment D. (Reference: Greiner Report - Basin 900, Area = 31.3 ac., Q100 = 127.2 cfs). For the purpose of comparisons, the calculations will reflect both design assumptions, but the final values will depend entirely on the actual construction plans for each lot. Minor peak flow variations to the master plan may occur for each basin, but there is an adequate safety factor to allow for these fluctuations due to a 20% freeboard equivalent factor for the box culvert downstream capacities (Reference: Greiner Report - Exhibit 3).

With these factors in mind, this analysis will present realistic guidelines for follow-up approvals of individual drainage construction plans, notwithstanding minor variations in the final flow rates. N.T. OK if flow rates for developed cond. from are less than what you've designed for.

The lot/basin-by-basin narrative will provide general guidelines to help coordinate adjacent lot developments within the site. Rim elevations (See Natural Grnd column) on the Storm Sewer Inventory Report are for general reference to insure that the basin parameters are maintained and that flows are not misdirected to an area unprepared to handle additional storm runoff.

- Basin 1 - Lot 1 will drain to the landscape buffer zone common with Basin 6, with flows being collected at inlets situated along the landscaped zone. The development of this lot will require the construction of a the SS Lines # 10 - 16 to intercept these flows, which will additionally provide drainage inlets for Lot 2 and portion of Lot 6.

- Basin 2. - Lot 2 will drain to the landscape buffer zone common with Basin 6, with flows being collected at inlets situated along the landscaped zone. If the development of this lot occurs first, it will require the construction of the SS Lines # 10 - 13 to intercept these flows, which will provide a future connection point for Lot 1 and the upper portion of Lot 6.

- Basin 3. - Lot 3 will be one of the first areas to be developed within the overall tract and will require the construction of the southern leg of the site SS Lines #6 - 7. This reach will handle Lot 3 flows and provide an outlet for Lots 1, 2 and a majority of Lot 6. Flows from Lot 3 will be routed across the parking areas to Inlet #3 and also picked up by a small SS extension needed to intercept roof flows and area drains from each building.

- Basin 4. - This area will surface drain directly to the private SS system Inlet #1, which will be connected to the existing 60" culvert crossing Office Blvd.

- Basin 5. - Lot 5 will be the first area to be developed within the overall tract and as such, will require the construction of the northern leg of the site SS Lines #1 - 5. This reach will handle Lot 5 flows and runoff from a portion of Lot 6. The portion of Lot 6 which drains toward the common boundary with Lot 5 will be directed to Inlet #2C located within Lot 6, rather than surface draining to the Lot 5 collection inlets. All flows will be routed to the existing Office Blvd. culvert to discharge into the Vineyard Arroyo SS system.

- Basin 6A. - A portion of Lot 6's natural flow path will outfall into the dip section in Office Blvd. Runoff from this area will pass through Jefferson Commons, Phase I, Basin B, via Commons Street to a concrete channel rundown into the North Diversion Channel (See Photos #5, 6, 7 & 8) See Basin 6A calculations - comments - about downstream capacities. The Greiner Report also acknowledged this corner of the tract would not be picked up by the Vineyard Arroyo system (See Aerial Map - Basin 900)

- Basin 6. - Flows from Lot 6 will be intercepted at numerous locations. Inlet #2C will collect flows from the area adjacent to Lot 5 and will be constructed as part of the Lot 5 development. Inlet #4A will collect flows from the area adjacent to Lot 4. The development of this portion of Lot 6 will require the construction of a the SS Lines #8 - 9 to intercept these flows at Inlet #4A. The remainder of Lot 6 will be intercepted by Inlets #4B - 4G situated along the landscape zone. The SS lines #10 - 16 will be constructed by the first adjacent lot to be developed along this reach, either Lot 6 or Lots 1 & 2.

Offsite Drainage Area
See Aerial Map

warehouse

1 story block building

1 story block building

warehouse

North

NTS

Singer Boulevard NE

Hi Pt

Jefferson Street NE

SS inlets

Office Boulevard NE

Commons Avenue NE

6A

Q=19

6

5

OFFICE/LAB BLDG.
FF=5134

Inlet #2C
Q=14

Inlet #2B
Q=6

12' wide landscape buffer corridor

Inlet #4A
Q=12

Q=6
Inlet #4G

Q=6
Inlet #4F

Q=6
Inlet #4E

Q=6
Inlet #4D

Q=6
Inlet #4C

Q=6
Inlet #4B

1

Q=5
Inlet #2A

Inlet #2
Q=6

4

RESTAURANT

RESTAURANT

Inlet #4
Q=12

2

30' wide perimeter landscape zone

Inlet #1
Q=15

Proposed SS

Existing SS

To Vineyard Channel

RESTAURANT
FF=5133

RESTAURANT
FF=5132

Inlet #3
Q=21

3

Office Boulevard NE

Frontage Road

Legend

- Basin Bndry
- Lot/Tract Bndy
- Storm Sewer
- Surface Flow
- Q=21 Peak Flow Rate @ Pt. of Conc.
- 3 Basin/Lot #

Basin Map

Summary of Results

Drainage management within Basin 6A will involve surface routing across the parking/access areas to the dip section at Office Blvd. & Commons Ave. The developed discharge rate may have to be a controlled release, depending on available downstream capacity (See Basin 6A calcs).

Drainage management within Basins 1 through 6 will be surface routed to a series of SS inlets situated along the lot boundaries and in the landscape buffer zones, for free discharge into the Vineyard Arroyo system.

- Parking/Access Areas:
  Where flows concentrate on pavement with less than a 1% slope, it is recommended that concrete valley gutters be installed to control the grades and eliminate low spots in the flow paths. Where flows are carried against a curb, a curb and gutter section should be used. All other curbs can be extruded or header curbs.

- Landscape Buffer Zones:
  The type of landscape material should be adjusted to accommodate the potential of surface flow erosion. While the SS system will be extended out along each landscape leg to reduce the effect of concentrated flows, small diameter gravel associated with SW style landscaping and plastic lining should be restricted to areas not impacted by concentrated flows. For areas dealing with erosive potential, large cobbles, sod or erosion fabrics should be incorporated into the project. Additional protection should be be considered along pavements, footings and curbs to prevent undercutting of improvements.

Main Storm Sewer System (Lines #1, 2, 6 and 7)
The main SS system will be constructed as part of the initial development to serve as the drainage "framework" for the overall tract. This system will be "fixed in place", thus establishing an outfall system from which all the proposed future lots will be provided a connection for either the secondary SS lines or private internal lot systems which pick up roof flows, etc.

Inlet #1: This drop inlet will have 15 sf open grate area available, combined with the junction structure, and be located in the access street area.. The outlet (Line #1), a 54" RCP, will connect to the existing 60" lateral from the box culvert section of the Vineyard Arroyo system.

Inlet #2: This drop inlet will have 5.1 sf open grate area available, combined with the junction structure, and be located in the access street area. It will serve as the juncture structure for the secondary line located in the landscape zone which will be

constructed as part of the development of Lot 5. The outlet (Line #2), a 36" MP, will drain to Inlet #1.

Inlet #3: This drop inlet will have 5.1 sf open grate area available, combined with the junction structure, and be located in the access street area. This junction will also serve as the outfall point for a small SS extension needed to intercept roof flows and area drains from each building in Lot 3 The outlet (Line #6), a 48" MP, will drain to Inlet #1.

Inlet #4: This drop inlet will have 8 sf open grate area available, and be located in the access drive which crosses the landscaped buffer zone. It will serve as the juncture structure for two secondary lines (SS Lines #8 & 9, and #10 - 16) located in the landscape zones and constructed as part of the development of either Lot 6 or Lots 1 & 2. The outlet (Line #7), a 42" MP, will drain to Inlet #3.

When the curb and gutter is completed on the east side of Office Blvd., an additional single inlet will be needed to pick up the low spot established by the existing pavement. This inlet will match the existing system located on the west curb located north of the 60" lateral (See Photo #1) A 12" dia. lateral connected to existing MH serving the west drop inlet will handle the street flows.

Secondary Storm Sewer System (Lines #3 - 5, and 8 - 16)
The secondary SS system will be constructed as adjoining lots are scheduled for development. All easements for the SS system will be granted with the plat and the infrastructure agreements will provide the guarantees for future construction, but the system will not be "fixed in place", thus providing a flexibility for drainage variations which will arise from meeting the needs of a specific site plan.

Inlets 2A - 2C: These drop inlets will serve as collection points for flows from Lot 5 and a portion of Lot 6 which adjoins Lot 5. Inlets 2A and 2B will be located within the landscape zone and will function in sump conditions to interrupt any channelization of flows and prevent surface carryover to the next downstream inlet. Inlet 2C will be positioned within Lot 6 to intercept future parking/access surface flows.

Inlet 4A. - This drop inlet will serve as a collection point for the portion of Lot 6 which adjoins Lot 4. Surface flows will drain to the landscape buffer zone for interception by this inlet, which is situated at a mid-point on the lot boundary.

Inlets 4B - 4G. - These drop inlets will serve as collection points for flows from both sides of the landscape buffer zone, with Lots 1, 2 and 6 contributing to the SS system. All of these inlets will be located within the landscape buffer zone and are planned to function in sump conditions, thereby keeping surface flow concentrations within the landscape zone to a minimum.

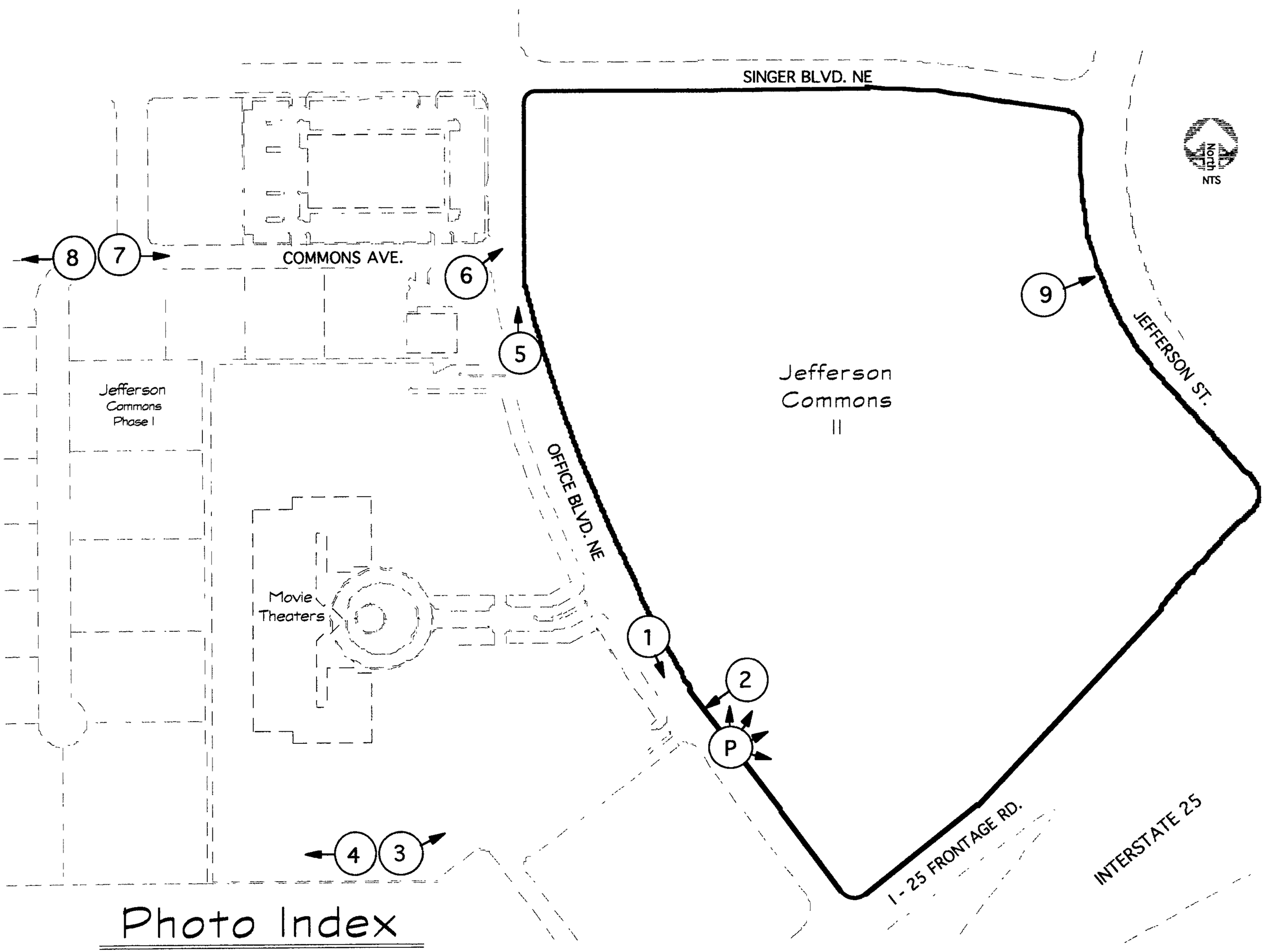
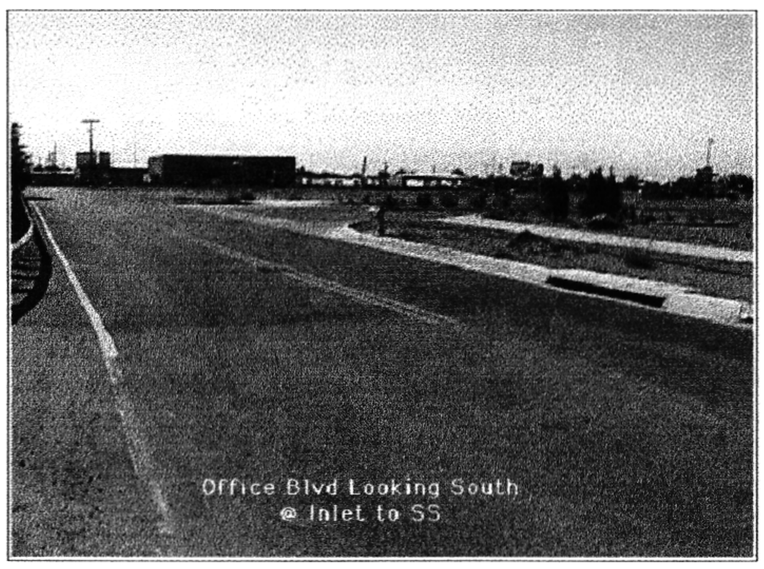
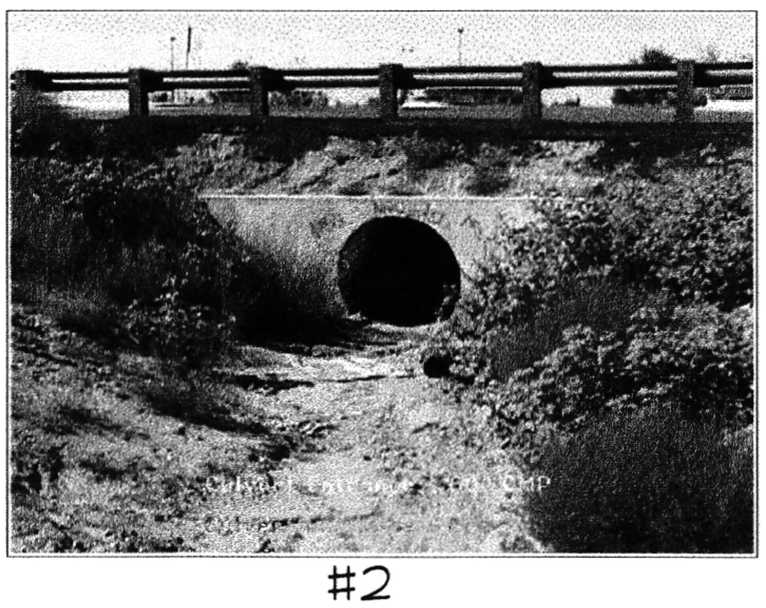

SINGER BLVD. NE
North
NTS
COMMONS AVE.
8
7
6
5
9
JEFFERSON ST.
Jefferson
Commons
Phase I
Jefferson
Commons
II
OFFICE BLVD. NE
Movie
Theaters
1
2
P
4
3
I - 25 FRONTAGE RD.
INTERSTATE 25

Photo Index

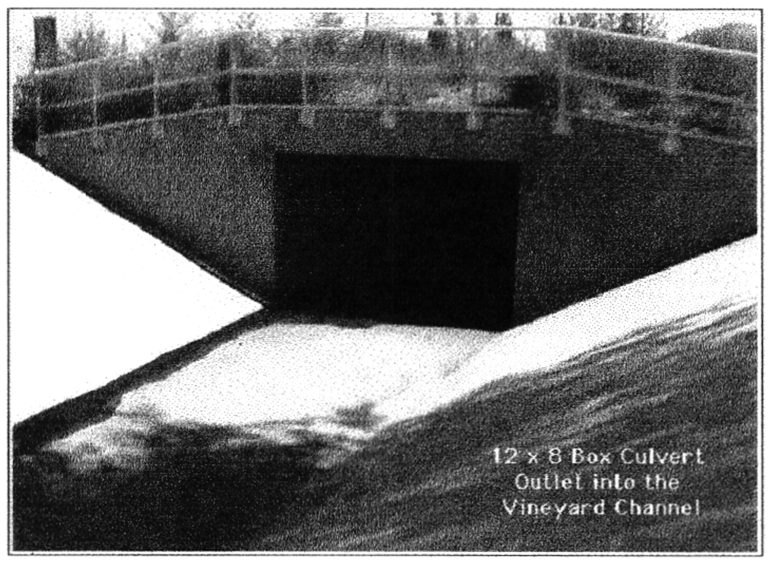
Site Photos



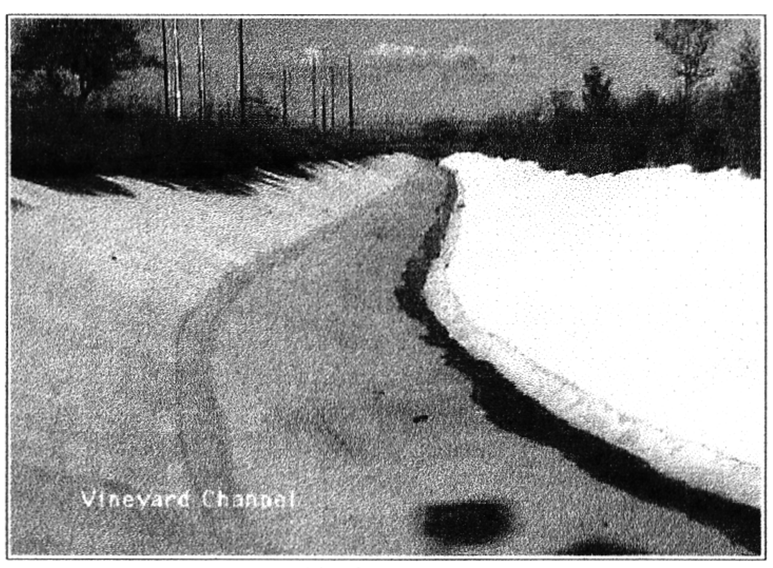
#1



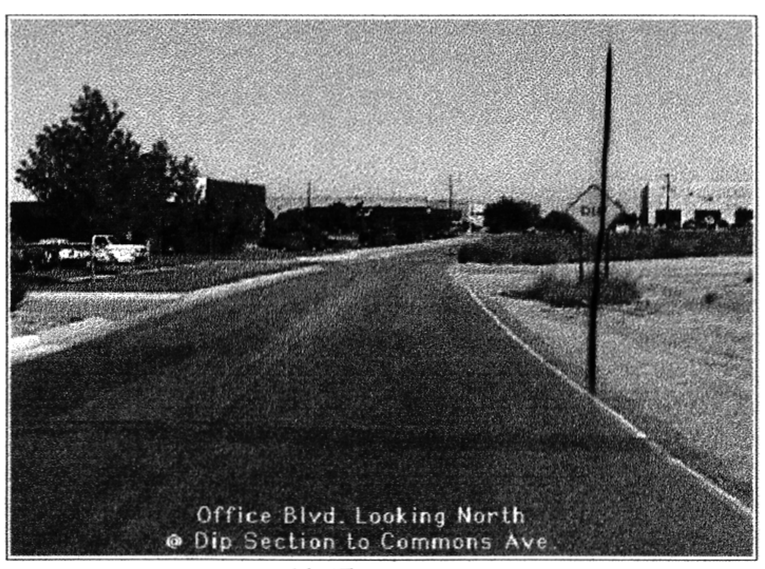
#2



#3

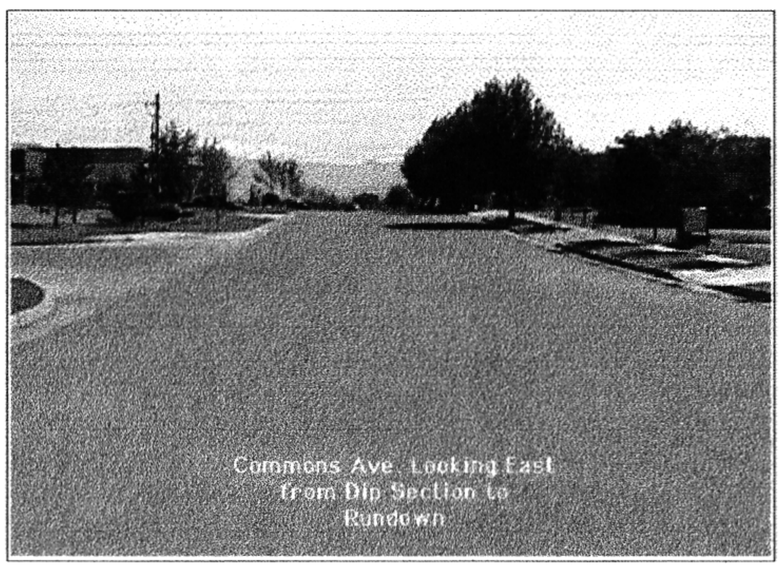


#4



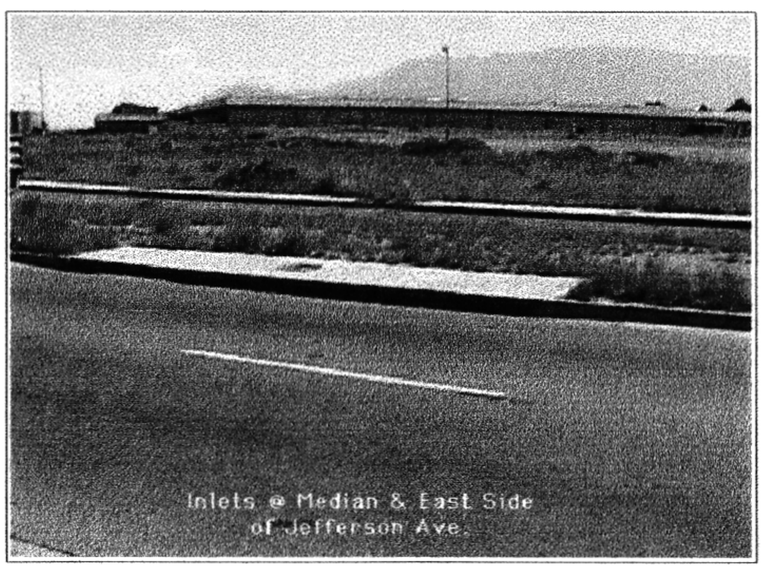
#5

#6

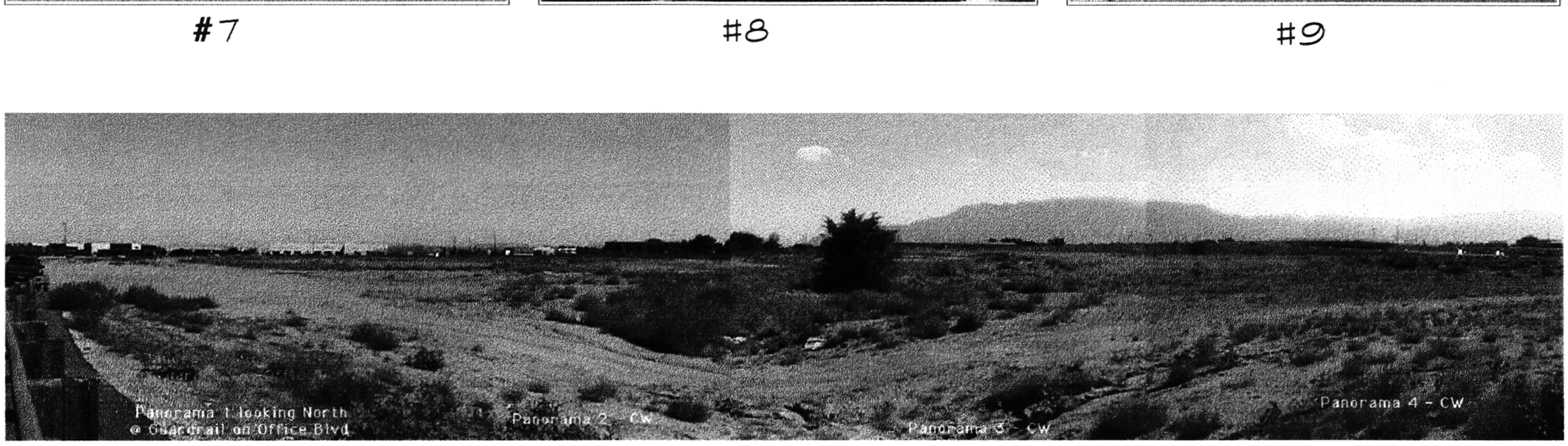


#7

#8



#9



Panorama looking North & East

Calculations

The following calculations address the future developed conditions for the Jefferson Commons II Subdivision, encompassing the first phases presently established for Lots 3 and 5.

Two defined drainage outflows for the tract have been established:

- The first outfall involves the northwest corner of the tract. On-site flows combine with runoff with the Singer Blvd. basin at the Office Blvd./Commons Ave. intersection, and are routed west within the existing downstream street/rundown to the North Diversion Channel.

- The second outfall point drains the remaining portion of the development, which is divided into six basins. Runoff is planned to surface drain across future access/parking areas and be collected by a private SS system, which will be connected to the Vineyard Arroyo drainage system at Office Blvd.

Basin #1

AREA OF SITE: 113,296 SF = 2.6 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	22,659	SF
Area c	=	11,330	SF
Area d	=	79,307	SF
Total Area	=	113,296	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	22,659	SF
Area c	=	0	SF
Area d	=	90,637	SF
Total Area	=	113,296	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75 in.	Developed E	=	1.85 in.

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

MP V360	=	16551 CF	Developed V360	=	17485 CF

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

For Precipitation Zone 2

Qpa = 1.56
Qbb = 2.28
Qpc = 3.14
Qpd = 4.70

MP Qp	=	10.6 CFS	Developed Qp	=	11.0 CFS

Basin #1 will drain onto the adjoining landscape buffer zone, with flows intercepted by lines 14 - 16 of the SS system. Four drop inlets, 4D through 4G, will be available to pick up the runoff. If development of Lot 1 precedes other downstream lot activity, the SS system lines #10 through 16 will have to be installed concurrently with Lot 1. Flows within the lot can be routed across the surface by way of the access and parking areas or picked up with extensions of the SS system into the lot area. Should there be any cross drainage onto Lot 2, appropriate easements will have to be established between the respective lot owners.

Drop inlets within the landscaping area are planned to function in a sump condition, with a minimum head of 0.5'. The inlet grate to be used will be the Neenah Model # R4346, with an open area of 4.7 sf. Assuming a 50% clogging factor, available open area would be 2.4 sf, for a capacity of up to 8 cfs / inlet. Flow distribution of the inlets in the landscape zone was designed at 6 cfs / inlet, so each inlet will have adequate capacity under the most severe clogging conditions.

Basin #2

AREA OF SITE: 109,253 SF = 2.51 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	21,850	SF
Area c	=	10,925	SF
Area d	=	76,478	SF
Total Area	=	109,253	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	21,850	SF
Area c	=	0	SF
Area d	=	87,403	SF
Total Area	=	109,253	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	=	1.85 in.

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

MP V360	=	15960	CF	Developed V360	=	16861 CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14
Qbb	=	2.28		Qpd	=	4.70
MP Qp	=	10.2	CFS	Developed Qp	=	10.6 CFS

Basin #2 will drain onto the adjoining landscape buffer zone, with flows intercepted by lines 10 - 13 of the SS system. Two drop inlets, 4B and 4C, will be available to pick up the runoff. If development of Lot 2 precedes any portion of Lot 6, the SS system lines #10 through 13 will have to be installed concurrently with Lot 2. Flows within the lot can be routed across the surface by way of the access and parking areas or picked up with extensions of the SS system into the lot area. Should there be any cross drainage onto Lot 3, appropriate easements will have to be established between the respective lot owners.

Total flow to the landscape zone from Lots 1, 2 and a portion of Lot 6 will approach 51 cfs. Distribution among the 6 inlets in the landscape zone provides an interception rate of 6 cfs/ inlet. Inlet #4, located in the access drive at the lowest point of the landscape zone, has an interception capacity of 12 cfs and will provide the final interception for any overflow from the upstream series of inlets.

Basin #3

AREA OF SITE: 220,853 SF = 5.07 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	44,170	SF
Area c	=	22,085	SF
Area d	=	154,598	SF
Total Area	=	220,853	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	44,170	SF
Area c	=	0	SF
Area d	=	176,683	SF
Total Area	=	220,853	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	=	1.85	in.

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

MP V360	=	32263	CF	Developed V360	=	34085	CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14	
Qbb	=	2.28		Qpd	=	4.70	
MP Qp	=	20.6	CFS	Developed Qp	=	21.4	CFS

Basin #3 drains directly to the private SS system Inlet #3, which will be situated in the center of the access street, and be combined into the juncture MH used for the change in direction of the SS line from Line #6 to Line #7. All flows within the basin will either travel to the inlet on the surface by way of the access and parking areas, or be picked up with extensions of the SS system into the lot area. Roof flows and half the parking area will be intercepted by an extension of a private SS. The surface discharge to inlet #3 will be reduced by approximately 12 cfs.

Based on calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 9 cfs of surface flow from the basin would be 2.6 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted (Ref: HEC-12,Section 8.1, Federal Highway Admin.). Therefore, a total open grate area of 5.2 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 5.1 s f (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

Basin #4

AREA OF SITE: 156,127 SF = 3.58 Ac.

Greiner Master Plan flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	31,225	SF
Area c	=	15,613	SF
Area d	=	109,289	SF
Total Area	=	156,127	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	31,225	SF
Area c	=	0	SF
Area d	=	124,902	SF
Total Area	=	156,127	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75 in.	Developed E	=	1.85 in.

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

MP V360	=	22808 CF	Developed V360	=	24096 CF

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

For Precipitation Zone 2

Qpa = 1.56
Qbb = 2.28
Qpc = 3.14
Qpd = 4.70

MP Qp	=	14.6 CFS	Developed Qp	=	15.1 CFS

Basin #4 drains directly to the private SS system Inlet #1, which is connected to the Vineyard Arroyo at Office Blvd. All flows within the basin will travel to the inlet on the surface by way of the access and parking areas.

Based on the previous calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 15.1 cfs of surface flow from the basin would be 4.4 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted. Therefore, a total open grate area of 8.9 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 15 sf (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

Basin #5

AREA OF SITE: 173,563 SF = 3.98 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	34,712	SF
Area c	=	17,356	SF
Area d	=	121,495	SF
Total Area	=	173,563	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	34,712	SF
Area c	=		SF
Area d	=	138,851	SF
Total Area	=	173,563	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	= 1.85 in.

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

MP V360	=	25355	CF	Developed V360	=	26787 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70

MP Qp	=	16.2	CFS	Developed Qp	=	16.8 CFS

Basin # 5 will discharge approximately half of its runoff onto the surrounding access street around the west side of the building for direct routing to Inlet # 2. Flow within the access street will be approximately 6 cfs. Based on the previous calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 6 cfs of surface flow from the basin would be 1.8 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted. Therefore, a total open grate area of 3.5 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 5.1 sf (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

The remainder of the basin (11 cfs) will drain to a landscape zone bordering the common area with Basin #4. These flows will be picked up by two inlets, Inlet 2A and 2B, located within the landscape zone. Each inlet has the capacity to intercept up to 8 cfs under a 50% clogged condition (See calcs - Basin #1). The final inlet on the SS system serving this area will be Inlet #2C, which will pick up flows from a portion of Lot 6 which lies adjacent to the Lot 5 boundary. Estimated flows from this portion of Lot 6 are 14 cfs. A double inlet will be required for Inlet #2C.

Basin #6

AREA OF SITE: 548,795 SF = 12.6 Ac.

Greiner Master Plan flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	109,758	SF
Area c	=	54,880	SF
Area d	=	384,157	SF
Total Area	=	548,795	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	109,758	SF
Area c	=	0	SF
Area d	=	439,037	SF
Total Area	=	548,795	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	=	1.85	in.

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

MP V360	=	80170	CF	Developed V360	=	84697	CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14	
Qbb	=	2.28		Qpd	=	4.70	
MP Qp	=	51.2	CFS	Developed Qp	=	53.1	CFS

Basin 6 comprises the largest of the six basins draining to the private SS system. All flows will be directed to one or another of the landscaped buffer zones which boarder the lower portion of the zone. Flows will be directed into the zone to harvest a portion of the runoff for the landscaping, with excess volume being captured by the SS system for routing to the Vineyard Arroyo SS system (See inlet calcs - Basin #1). Both legs of the zone meet at a vehicle access point common with Basin #3, which will be the location for Inlet #4, which serves as the junction structure of the SS lines in the landscape zone. All remaining surface flows which are either not routed to the landscape zone or bypass the other inlets will be picked up by Inlet #4.

Referencing Inlet #4, based on the previous calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 12 cfs of surface flow from the basin would be 3.5 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted. Therefore, a total open grate area of 7 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 8 sf (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

Estimated flow distribution of Lot 6 has determined a peak flow of 14 cfs intercepting the common boundary of Lot 5, which will be picked up by Inlet #2C (See Basin 5 calcs), and 12 cfs intercepting the common boundary of Lot 4, which will be picked up by Inlet #4A, a double inlet. The remaining runoff from Basin 6 will be intercepted by the SS system common to Lots 1 and 2 (See Basin 1 & 2 calcs).

Total Jefferson Commons II developed runoff from Basins 1 through 6 equals 128 cfs. The Greiner Drainage Master Plan projected a peak flow of 127.2 cfs from Basin 900 (See Aerial Map from Greiner Report). Capacity is available to free discharge into the Vineyard Arroyo system from Basins 1 - 6.

Basin 6A

AREA OF SITE: 197,921 SF = 4.54 Ac.

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

Existing Conditions

On-Site Existing Land Condition

Area a	=	0	SF
Area b	=	138,544	SF
Area c	=	59,376	SF
Area d	=	0	SF
Total Area	=	197,920	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	39,584	SF
Area c	=		SF
Area d	=	158,337	SF
Total Area	=	197,921	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

Existing E	=	0.89 in.	Developed E	=	1.85 in.

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

Existing V360	=	14597 CF	Developed V360	=	30546 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70
Existing Qp	=	11.5 CFS	Developed Qp	=	19.2 CFS

Basin 6A is located in the northern portion of the site. Flows from this area drain to a dip section at the intersection of Office Blvd. and Commons Ave. These flows combine with drainage from the Singer Blvd. Basin, which is comprised of Singer Blvd. and adjacent businesses situated along the north side of the street (See Aerial Map for basin definition). Total flow from the Singer Basin is 44.3 cfs, which, when combined with the developed Basin 6A flows, totals 63.5 cfs at the intersection of Office and Commons Ave. Adding the on-site flows from JC I, Basin B, of 30 cfs, total flow draining to the Commons Ave. rundown would be 93.5 cfs. The original drainage plan for the Commons Ave. rundown planned for a total flow of 67 cfs (Jefferson Commons, Phase I, Drainage Plan, Analysis Point B - Future). Because the Singer Basin and JC I, Basin B areas have been fully developed, total Q100 entering the rundown is presently 74.3 cfs from just these two areas, or 7 cfs in excess of the original design. This could be considered to be within an acceptable 10% variation of the accuracy of storm data without raising major concerns about possible flooding at the inlet to the rundown.

However, based on the original design parameter's for the capacity of the downstream Commons Ave. drainage system, Basin 6A, JC II, will have to have some degree of detention ponding and controlled release to keep from adding to the flooding potential of the Commons Ave. inlet to the rundown (See Photo #8 - Site Photos). A more detailed drainage analysis, based on as-built conditions of the street, dip section and rundown, should be completed to establish the actual capacity of the downstream system when any phase of Basin 6 is scheduled for development .

Singer Blvd. Basin

AREA OF SITE: 457,380 SF = 10.5 Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	91,476	SF
Area c	=	0	SF
Area d	=	365,904	SF
Total Area	=	457,380	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

Developed E = 1.85 in.

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

Developed V360 = 70589 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70

0.0 Developed Qp = 44.3 CFS

The Singer Blvd. Basin is comprised of the street area and adjacent businesses located along the north side of the street. Some of the sites drain directly to Singer, while others drain to the rear of the lot, with flows following a common path west to Office Blvd. along the north side of the basin. All flows converge at the Office/Singer intersection before flowing south to the Commons Ave intersection.

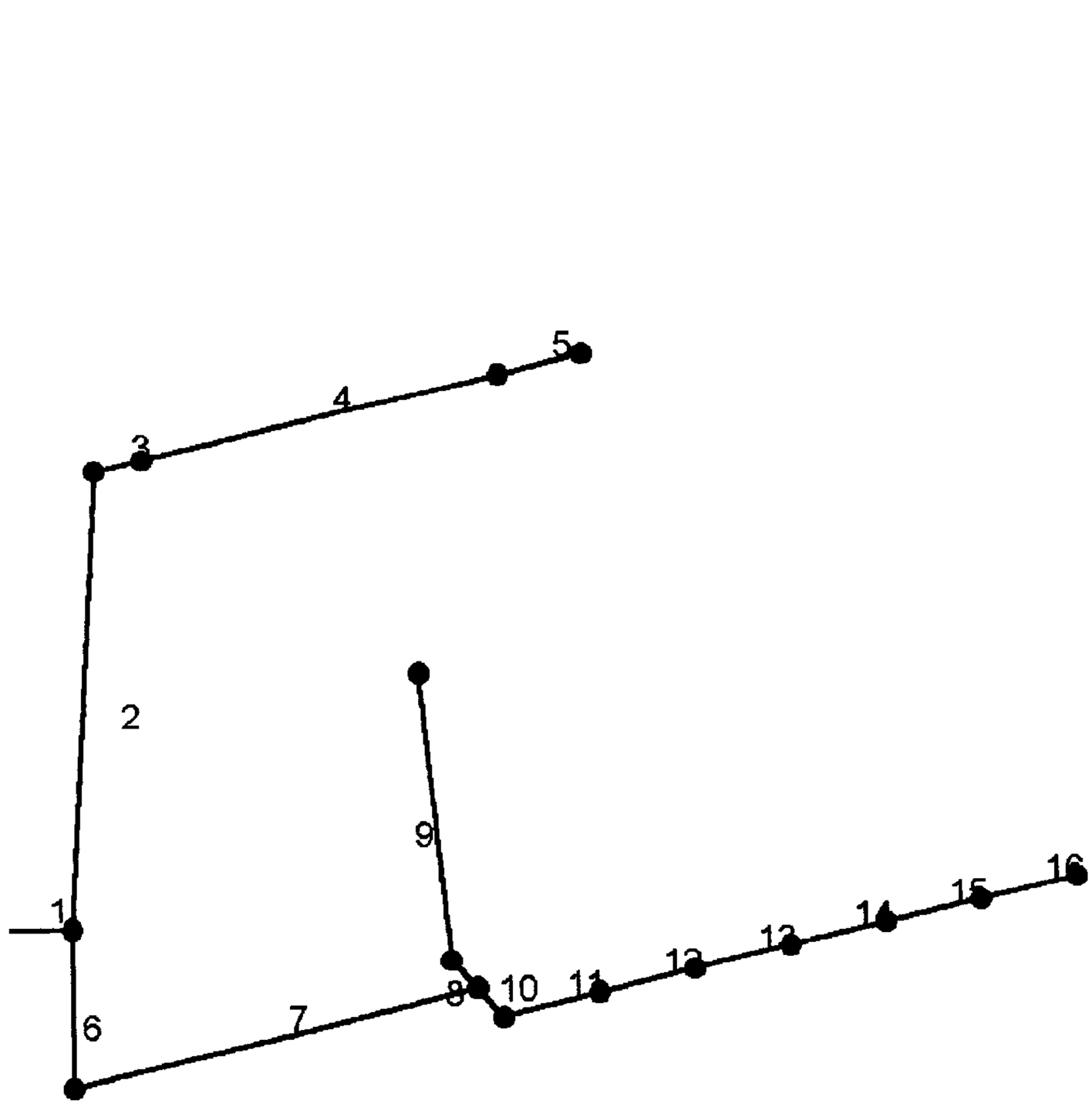
Storm Sewer Inventory Report

Line #	Line ID	DnStr line #	Defl angle (deg)	Line length (ft)	Line size (in)	Line type	Line slope (%)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Known Q (cfs)	Invert El dn (ft)	Invert El up (ft)	N value	Junction type	J-Loss coeff (JLC)	Natural grnd (ft)	Dn line #
1	VA-Inlet 1	0	0	63	54	Circular	0.79	0.00	.00	0	15.1	15.30	15.80	.013	MH	1.0	24.00	Off
2	Inlet 1-2	1	-85	315	36	Circular	1.00	0.00	.00	0	6.0	16.40	19.55	.012	MH	1.0	25.10	1
3	Inlet 2-2A	2	76	50	24	Circular	3.40	0.00	.00	0	5.0	19.80	21.50	.012	MH	1.0	25.40	2
4	Inlet 2A-2B	3	0	372	24	Circular	1.10	0.00	.00	0	6.0	21.70	25.80	.012	MH	1.0	29.00	3
5	Inlet 2B-2C	4	0	87	24	Circular	1.15	0.00	.00	0	14.2	26.00	27.00	.012	MH	1.0	30.00	4
6	Inlet 1-3	1	90	108	48	Circular	1.48	0.00	.00	0	21.4	16.40	18.00	.012	MH	1.0	27.00	1
7	Inlet 3-4	6	-99	422	42	Circular	0.57	0.00	.00	0	12.0	18.60	21.00	.012	MH	1.0	29.00	6
8	Inlet 4-MH	7	-135	33	36	Circular	0.91	0.00	.00	0	0.0	21.40	21.70	.012	MH	1.0	29.00	7
9	MH 1-Inlet	8	45	200	24	Circular	1.00	0.00	.00	0	12.0	22.00	24.00	.013	MH	1.0	31.00	8
10	Inlet 4-MH	7	45	33	36	Circular	0.91	0.00	.00	0	0.0	21.40	21.70	.012	MH	1.0	29.00	7
11	MH2-Inlet 4	10	-45	100	30	Circular	3.70	0.00	.00	0	6.0	22.00	25.70	.012	MH	1.0	32.00	10
12	Inlet 4B-4C	11	0	100	30	Circular	1.00	0.00	.00	0	6.0	26.00	27.00	.012	MH	1.0	33.00	11
13	Inlet 4C-4D	12	0	100	30	Circular	1.00	0.00	.00	0	6.0	27.30	28.30	.012	MH	1.0	34.00	12
14	Inlet 4D-4E	13	0	100	24	Circular	1.40	0.00	.00	0	6.0	28.60	30.00	.012	MH	1.0	35.00	13
15	Inlet 4E-4F	14	0	100	24	Circular	2.70	0.00	.00	0	6.0	30.30	33.00	.012	MH	1.0	39.00	14
16	Inlet 4F-4G	15	0	100	18	Circular	1.00	0.00	.00	0	6.0	33.30	34.30	.012	MH	1.0	40.00	15

PROJECT FILE: JCCMP.STM | I-D-F FILE: JC.IDF | TOTAL NUMBER OF LINES: 16 | RUN DATE: 11-12-

DESIGN CODES: Min. Pipe Size = 12 in; Max. Pipe Size = 96 in; Min. Slope = .2 %; Min. Cover = 2 ft; Inlet N-Values = .016 ; Average Inlet Throat

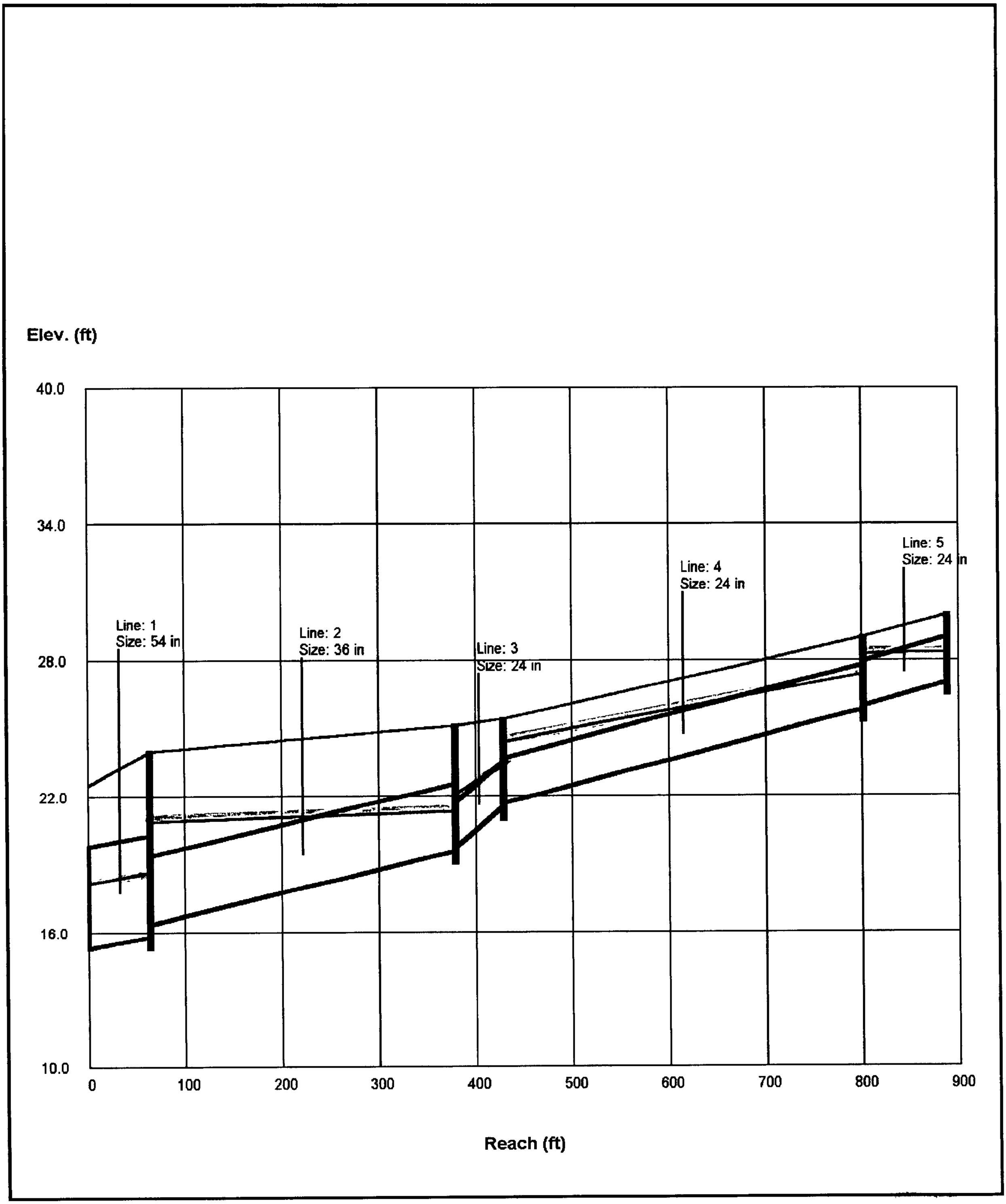
Plan View



Proj. file: JCCMP.STM	IDF file: JC.IDF	No. Lines: 16	11-12-1997

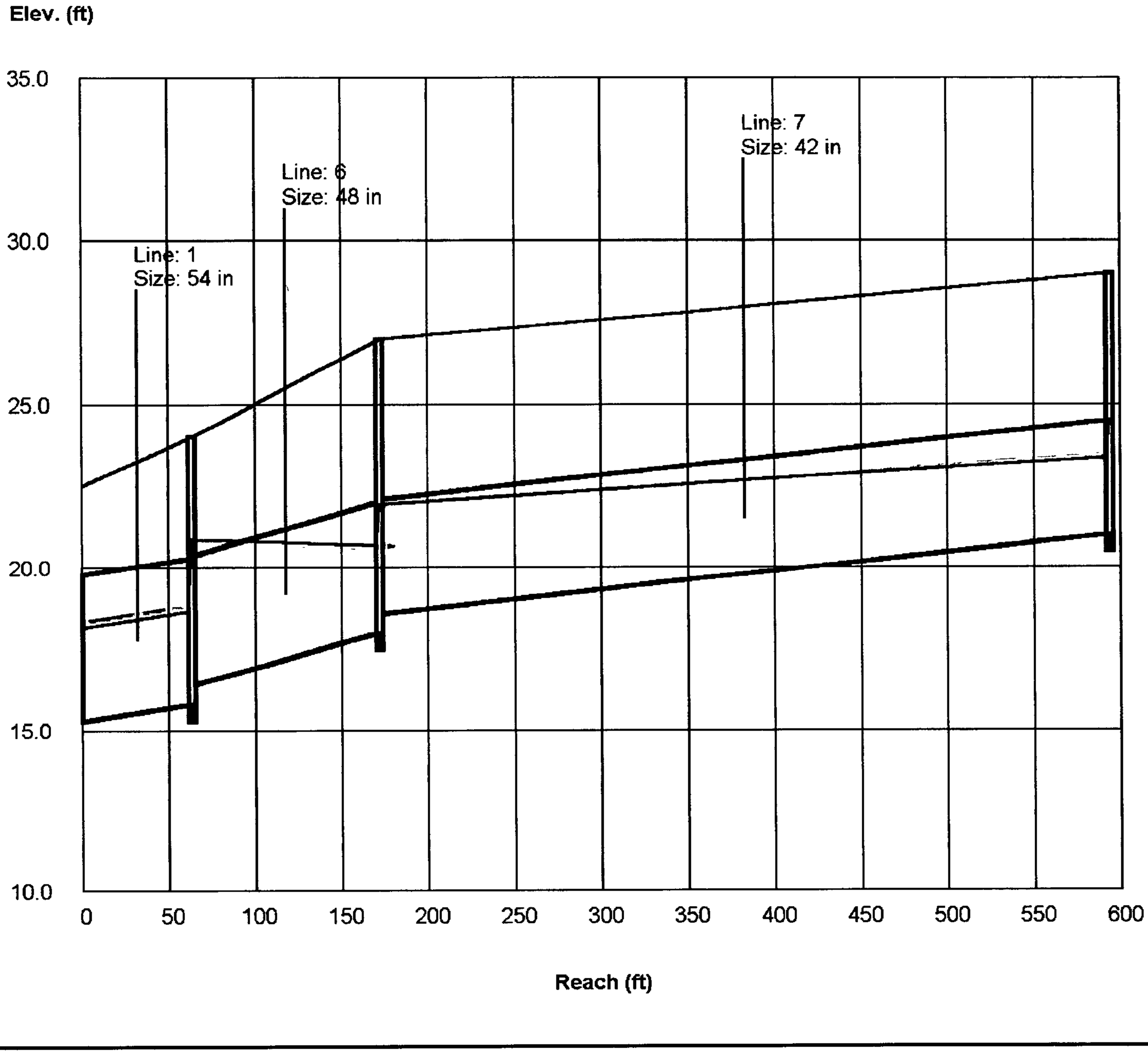
Storm Sewer Profile

Proj. file: JCCMP.STM



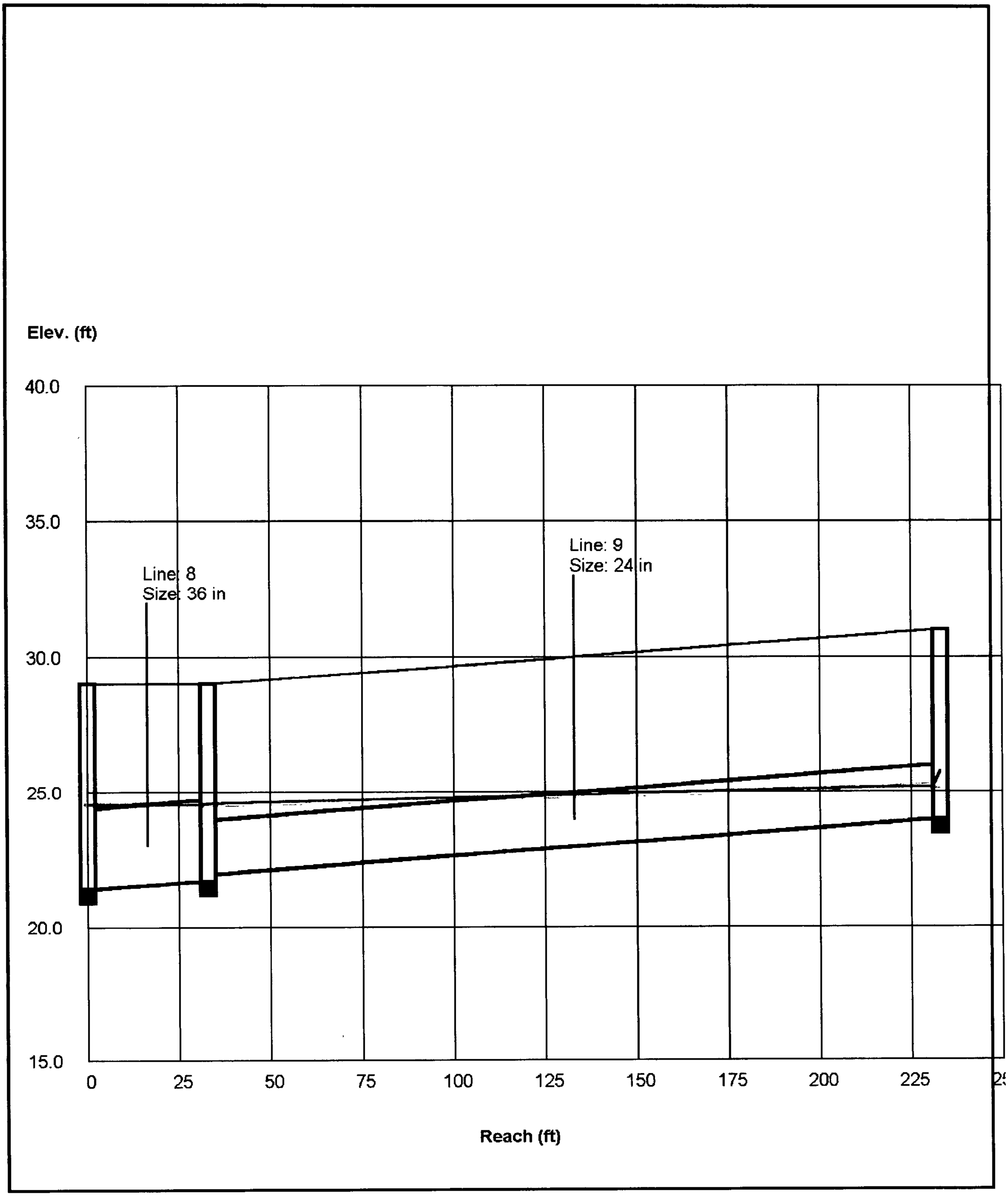
Storm Sewer Profile

Proj. file: JCCMP.STM



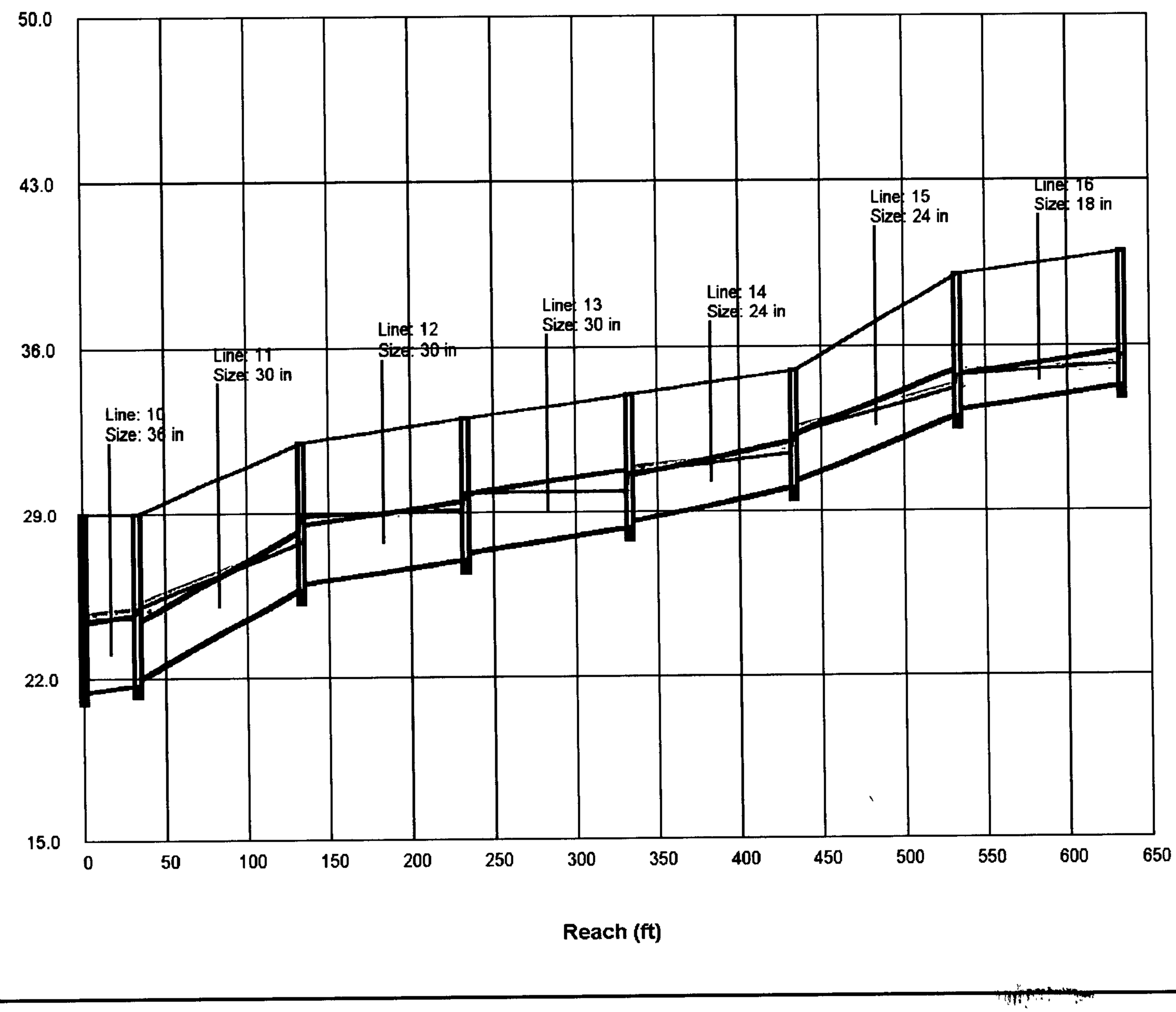
Storm Sewer Profile

Proj. file: JCCMP.STM



Storm Sewer Profile

Proj. file: JCCMP.STM



Line 1 **Q = 127.70** **Size = 54 x 54 (Cir)** **Nv = 0.013** **Len = 63.4** **JLC = 1.00**

VA-Inlet 1 / Outfall

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	15.30	34	18.17	20.38	10.71	11.93	4.33	2.70
Upstrm	15.80	34	18.67	20.88	10.71	11.93	4.33	3.70

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.789
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.789
Time of conc. (min)	= 6.46	Critical depth (in)	= 39
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 24.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 15.10
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 174.70
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to offsite	= 0.00	Width of Flow (ft)	= 0.00

Line 2 **Q = 31.20** **Size = 36 x 36 (Cir)** **Nv = 0.012** **Len = 315.3** **JLC = 1.00**

Inlet 1-2 / Downstream line = 1

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	16.40	36	20.88	21.18	7.07	4.41	0.00	4.60
Upstrm	19.55	22	21.34	22.12	4.41	7.07	2.94	2.55

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.999
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.298
Time of conc. (min)	= 2.83	Critical depth (in)	= 21
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 25.10
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 72.22
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 1 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 3 **Q = 25.20** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 50.0** **JLC = 1.00**

Inlet 2-2A / Downstream line = 2

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	19.80	24	22.12	23.12	3.14	8.02	0.00	3.30
Upstrm	21.50	22	23.30	24.41	2.98	8.46	1.20	1.90

Drainage area (ac)	= 0.00	Slope of invert (%)	= 3.400
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.583
Time of conc. (min)	= 2.55	Critical depth (in)	= 22
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 25.40
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 5.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 45.18
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 2 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 4 **Q = 20.20** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 372.0** **JLC = 1.00**

Inlet 2A-2B / Downstream line = 3

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	21.70	24	24.41	25.05	3.14	6.43	0.00	1.70
Upstrm	25.80	19	27.39	28.27	2.68	7.54	1.61	1.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.102
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.865
Time of conc. (min)	= 0.48	Critical depth (in)	= 19
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 25.72
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 3 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 5 **Q = 14.20** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 87.0** **JLC = 1.00**

Inlet 2B-2C / Downstream line = 4

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	26.00	24	28.27	28.59	3.14	4.52	0.00	1.00
Upstrm	27.00	16	28.36	28.97	2.28	6.23	1.86	1.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.149
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.430
Time of conc. (min)	= 0.00	Critical depth (in)	= 16
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 30.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 14.20
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 26.27
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 4 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 6 **Q = 81.40** **Size = 48 x 48 (Cir)** **Nv = 0.012** **Len = 108.4** **JLC = 1.00**

Inlet 1-3 / Downstream line = 1

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	16.40	48	20.88	21.53	12.56	6.48	0.00	3.60
Upstrm	18.00	32	20.69	21.96	8.97	9.07	3.76	5.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.476
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.400
Time of conc. (min)	= 5.86	Critical depth (in)	= 32
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 27.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 21.40
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 189.06
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 1 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 7 **Q = 60.00** **Size = 42 x 42 (Cir)** **Nv = 0.012** **Len = 422.0** **JLC = 1.00**

Inlet 3-4 / Downstream line = 6

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	18.60	40	21.96	22.58	9.50	6.32	3.43	4.90
Upstrm	21.00	28	23.37	24.53	6.94	8.65	3.27	4.50

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.569
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.462
Time of conc. (min)	= 3.52	Critical depth (in)	= 28
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 12.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 82.20
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 6 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 8 **Q = 12.00** **Size = 36 x 36 (Cir)** **Nv = 0.012** **Len = 32.8** **JLC = 1.00**

Inlet 4-MH 1 / Downstream line = 7

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	21.40	36	24.53	24.58	7.07	1.70	0.00	4.60
Upstrm	21.70	34	24.54	24.59	6.92	1.73	1.35	4.30

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.915
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.025
Time of conc. (min)	= 1.11	Critical depth (in)	= 13
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 0.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 69.10
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 7 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 9 **Q = 12.00** **Size = 24 x 24 (Cir)** **Nv = 0.013** **Len = 200.0** **JLC = 1.00**

MH 1-Inlet 4A / Downstream line = 8

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	22.00	24	24.59	24.81	3.14	3.82	0.00	5.00
Upstrm	24.00	15	25.23	25.77	2.02	5.94	1.95	5.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.481
Time of conc. (min)	= 0.00	Critical depth (in)	= 15
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 31.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 12.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 22.62
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 8 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 10 **Q = 36.00** **Size = 36 x 36 (Cir)** **Nv = 0.012** **Len = 32.8** **JLC = 1.00**

Inlet 4-MH 2 / Downstream line = 7

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	21.40	36	24.53	24.94	7.07	5.09	0.00	4.60
Upstrm	21.70	35	24.60	25.01	7.00	5.14	1.06	4.30

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.915
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.238
Time of conc. (min)	= 3.33	Critical depth (in)	= 23
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 0.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 69.10
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 7 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 11 **Q = 36.00** **Size = 30 x 30 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

MH2-Inlet 4B / Downstream line = 10

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	22.00	30	25.01	25.85	4.91	7.34	0.00	4.50
Upstrm	25.70	24	27.70	28.84	4.22	8.53	1.99	3.80

Drainage area (ac)	= 0.00	Slope of invert (%)	= 3.700
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.986
Time of conc. (min)	= 2.78	Critical depth (in)	= 24
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 32.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 85.46
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 10 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 12 **Q = 30.00** **Size = 30 x 30 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4B-4C / Downstream line = 11

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	26.00	30	28.84	29.42	4.91	6.11	0.00	3.50
Upstrm	27.00	26	29.17	29.85	4.53	6.62	1.68	3.50

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.439
Time of conc. (min)	= 2.22	Critical depth (in)	= 22
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 33.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 44.43
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 11 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 13 **Q = 24.00** **Size = 30 x 30 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4C-4D / Downstream line = 12

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	27.30	30	29.85	30.23	4.91	4.89	0.00	3.20
Upstrm	28.30	20	29.94	30.71	3.41	7.05	2.38	3.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.482
Time of conc. (min)	= 1.67	Critical depth (in)	= 20
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 34.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 44.43
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 12 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 14 **Q = 18.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4D-4E / Downstream line = 13

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	28.60	24	30.71	31.22	3.14	5.73	0.00	3.40
Upstrm	30.00	18	31.50	32.29	2.53	7.11	1.73	3.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.400
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 1.070
Time of conc. (min)	= 1.11	Critical depth (in)	= 18
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 35.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 28.99
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 13 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 15 **Q = 12.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4E-4F / Downstream line = 14

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	30.30	24	32.29	32.51	3.14	3.82	1.99	2.70
Upstrm	33.00	15	34.23	34.77	2.02	5.94	1.95	4.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 2.700
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.260
Time of conc. (min)	= 0.56	Critical depth (in)	= 15
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 39.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 40.26
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 14 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 16 **Q = 6.00** **Size = 18 x 18 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4F-4G / Downstream line = 15

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	33.30	18	34.77	34.95	1.76	3.41	1.49	4.20
Upstrm	34.30	11	35.23	35.65	1.16	5.18	1.45	4.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.697
Time of conc. (min)	= 0.00	Critical depth (in)	= 11
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 40.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 11.38
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 15 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Jefferson Commons II

PARCEL 3, DIGITAL PROPERTIES, ALBUQUERQUE, NM

Construction Plans for Private Infrastructure: Onsite Storm Sewer System

INDEX

SHEET TITLE	SHEET NO.
TITLE SHEET	1 OF 5
STORM DRAIN PLAN	2 OF 5
STORM DRAIN PROFILE - SOUTH	3 OF 5
STORM DRAIN PROFILES - NORTH & MIDDLE	4 OF 5
STORM DRAIN INLETS	5 OF 5

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

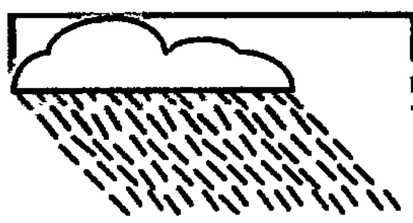
City Project No .

Sheet 1 Of 5

Jefferson Commons II

ALBUQUERQUE, NM

- Background
- Basin Analysis
- Calculations
- Summary of Results
- Drainage / Grading Plan



Lot 6 Drainage Report

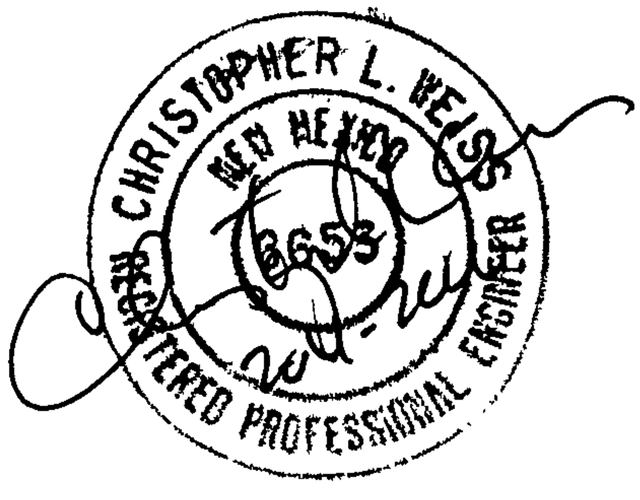
RECEIVED
MAR 10 2000
HYDROLOGY SECTION

February, 2000

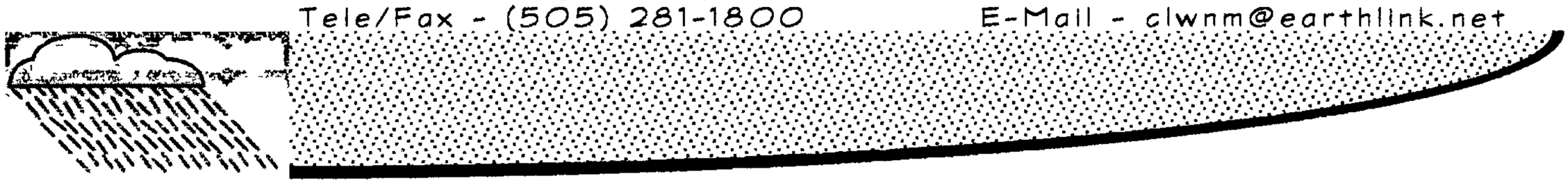
C. L. Weiss Engineering, Inc.

Jefferson Commons II

ALBUQUERQUE, NM



C.L. Weiss Engineering, Inc P.O. Box 97 Sandia Park, NM 87047
Tele/Fax - (505) 281-1800 E-Mail - clwnm@earthlink.net

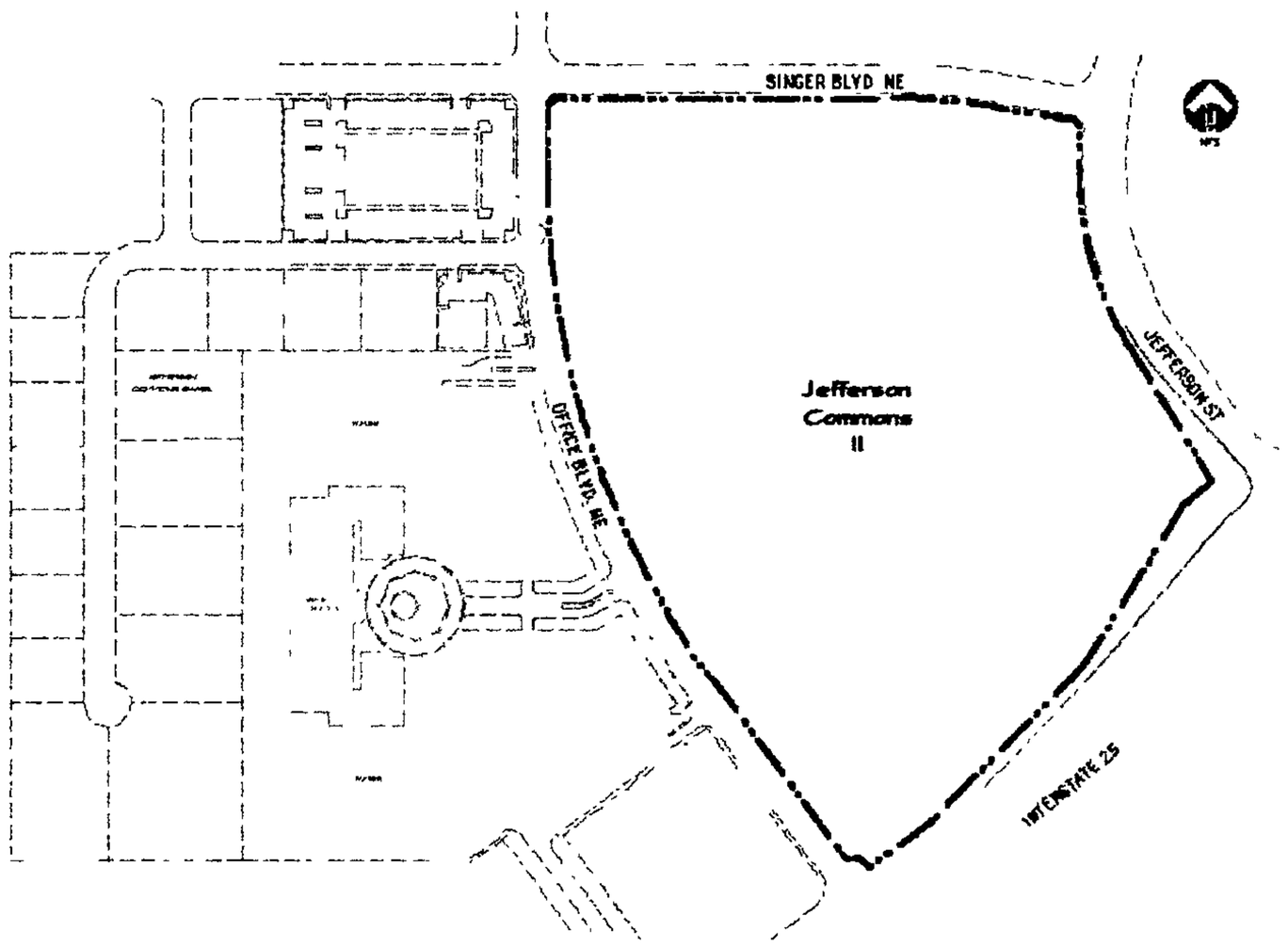


Background

Existing Site

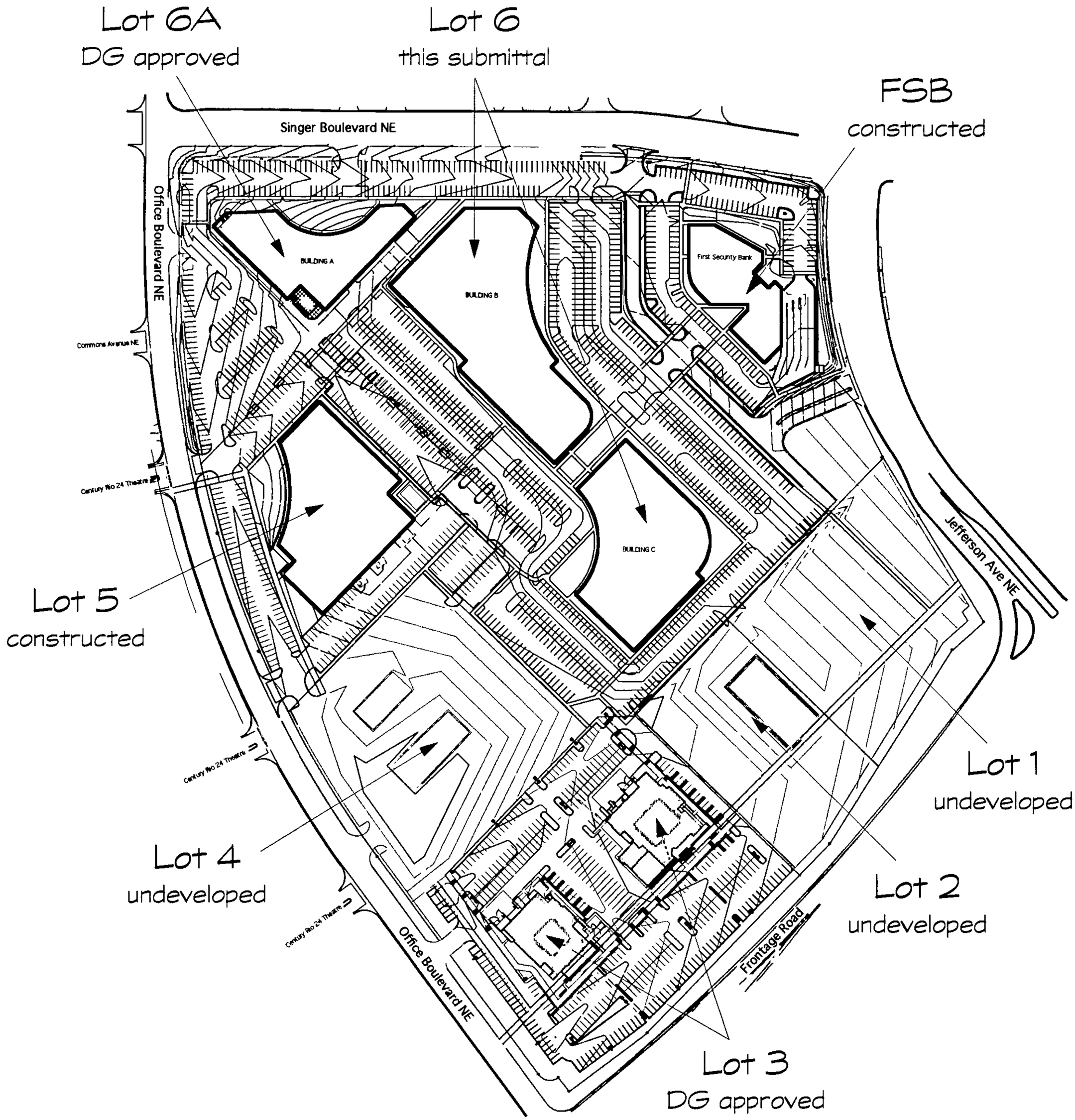
Reference is made to the Jefferson Commons II Master Drainage (JCMD), on file with the COA and approved November 24, 1997 (F17-D63), for background information.

Improvements within the Jefferson Commons II development have proceeded in stages as each lot was sold and defined by the purchaser's needs, as to building shape and space requirements. Presently, Lots 3, 5, 6A and the NE corner of Lot 6 (First Security Bank), have had drainage plans approved for specific site improvements. Lot 5 and the FSB site are the only competed sites, with construction slated for Lots 3 and 6A in the immediate future (see following site map). The referenced plans have established specific flow rates draining to the SS system, which to date have substantially matched the JCMD (See Basin Map - JCMD). The net result is that the SS system will function as planned, with slight adjustments made as specifics are established for each lot.



Site Map

(F-17-Z)



Jefferson Commons II

Basin Analysis

Proposed Site

The majority of Lot 6 is presently undeveloped, with a portion of the area occuppied by the First Security Bank, located in the NE quadrant of the lot. The FSB improvements have been connected to the master SS main at Inlet 4F (see JCMD). Total flows from the FSB portion of Lot 6 equals 13 cfs.

This submittal will focus on the remaining portion of Lot 6. The proposed developed layout will be defined by five sub-basins, as shown in the calculations. Flow from these basins will be picked up by the master SS main either at existing inlets or by extensions to the SS system, establishing new inlets within the lot. The following is a summary of the drainage management within the proposed improvements;

- Sub-basins 1 & 2 will be picked up by a SS extension from Inlet 4A. Total flow from these sub-basins will equal 11.5 cfs, with the master plan flow at Inlet 4A projected at 12 cfs. These will be the only sub-basins to drain to this inlet.

- Sub-basin 3 will be picked up by an extension from Inlet 4D. Total flow from this sub-basin will equal 5.1 cfs, with the master plan flow at Inlet 4D projected at 6 cfs. Some flow from Lot 2 (future) will access this inlet, as well as the downstream Inlet 4C.

- Sub-basin 4 will surface drain to Inlet 4. Total flow from this sub-basin will equal 9.9 cfs, with the master plan flow at Inlet 4 projected at 12 cfs. This inlet will also pick up runoff from a portion of Lot 2 (future) and Lot 3 (approved - 2.6 cfs surface flow and 0.8 cfs direct roof flow).

- Sub-basin 5 will surface drain to Inlet 2C. Total flow from this sub-basin will equal 13.7 cfs, with the master plan flow at Inlet 2C projected at 14 cfs. This will be the only area to drain to this inlet.

City of Albuquerque

March 30, 2000

Chris Weiss, PE
C.L. Weiss Engineering, Inc.
PO Box 97
Sandia Park, NM 87047

Re: Jefferson Commons II – Lot 6 Grading and Drainage Plan
Engineer's Stamp dated 3-9-00, (F17/D63A)

Dear Mr. Weiss,

Based on information contained in your submittal dated 3-10-00, the above referenced site cannot be approved for Building Permit until the following minor comments are addressed:

- There is an apparent low point at the entrance to the bank. Is there an existing inlet here? Please show all existing and proposed inlets and label them to keep them consistent with your previous excellent work.

- Is the proposed sidewalk in the parking areas raised or flush with the pavement? If there are some raised areas, please indicate where you are planning to have ramps (include arrows on these ramps) and add some additional spot elevations. I am especially confused about the area around Inlet 4.

- Since you are installing standard curb and gutter near inlets 2B1 and 2B2, wouldn't a Type A inlet be better?

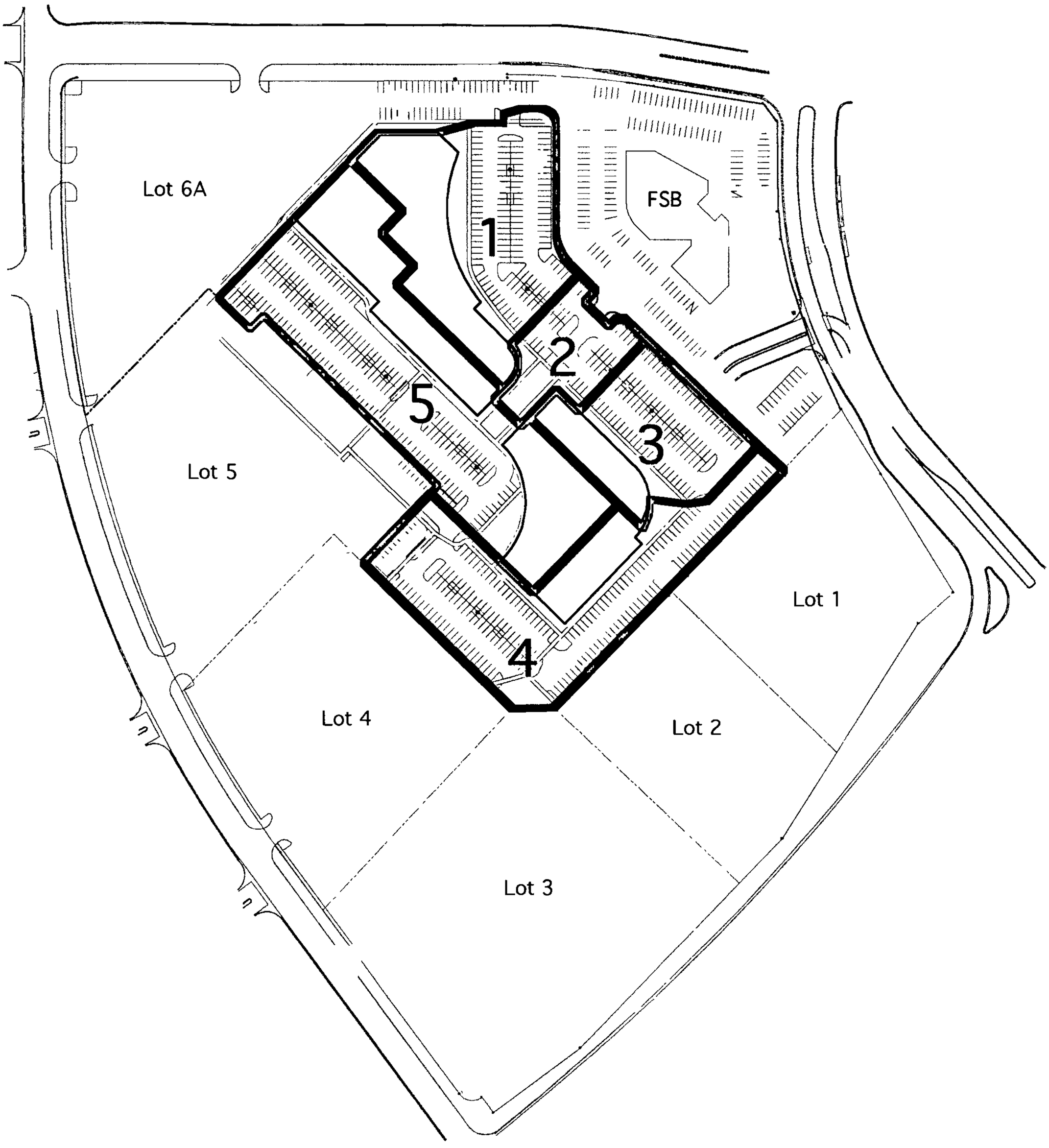
If you have any questions about my comments, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Hydrology Review Engineer

C: file



Lot 6 Basin Map

CALCULATIONS:

Calculations are based on the Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

Lot 6 Jefferson Commons II

AREA OF SITE: 404945 SF = 9 29626 Ac.

HISTORIC FLOWS:

On-Site Historic Land Condition

Area a	=	0	SF
Area b	=	0	SF
Area c	=	404945	SF
Area d	=		SF
Total Area	=	404945	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	60741	SF
Area c	=		SF
Area d	=	344203	SF
Total Area	=	404944	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

Historic E	=	1.13	in.	Developed E	=	1.92	in.
On-Site Volume of Runoff V360 = E*A / 12							
Historic V360	=	38132	CF	Developed V360	=	64757	CF
On-Site Peak Discharge Rate Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560							
For Precipitation Zone		2					
Qpa	=	1.56		Qpc	=	3.14	
Qbb	=	2.28		Qpd	=	4 70	
Historic Qp	=	29.2	CFS	Developed Qp	=	40.3	CFS

SUB-BASIN 1

Area of sub-basin flows = 89175 SF = 2.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.92 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 14261 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 8.9 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

SUB-BASIN 2

Area of sub-basin flows = 26385 SF = 0 6 Ac

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1 92 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 4219 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 2.6 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

SUB-BASIN 3

Area of sub-basin flows = 51675 SF = 1 2 Ac

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.92 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 8264 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 5.1 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

SUB-BASIN 4

Area of sub-basin flows = 99775 SF = 2 3 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1 92 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 15956 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 9.9 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

SUB-BASIN 5

Area of sub-basin flows = 137935 SF = 3.2 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1 92 in

Sub-basin Volume of Runoff (see formula above)

V360 = 22058 CF

Sub-basin Peak Discharge Rate (see formula above)

Qp = 13.7 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

ALBUQUERQUF GRATE CAPACITY CALCULATIONS

using orifice equation Q=CA * (2gh)^0.5

C	=	0.6
A	=	4.80
g	=	32.2
h	=	0.5
Q	=	16.34

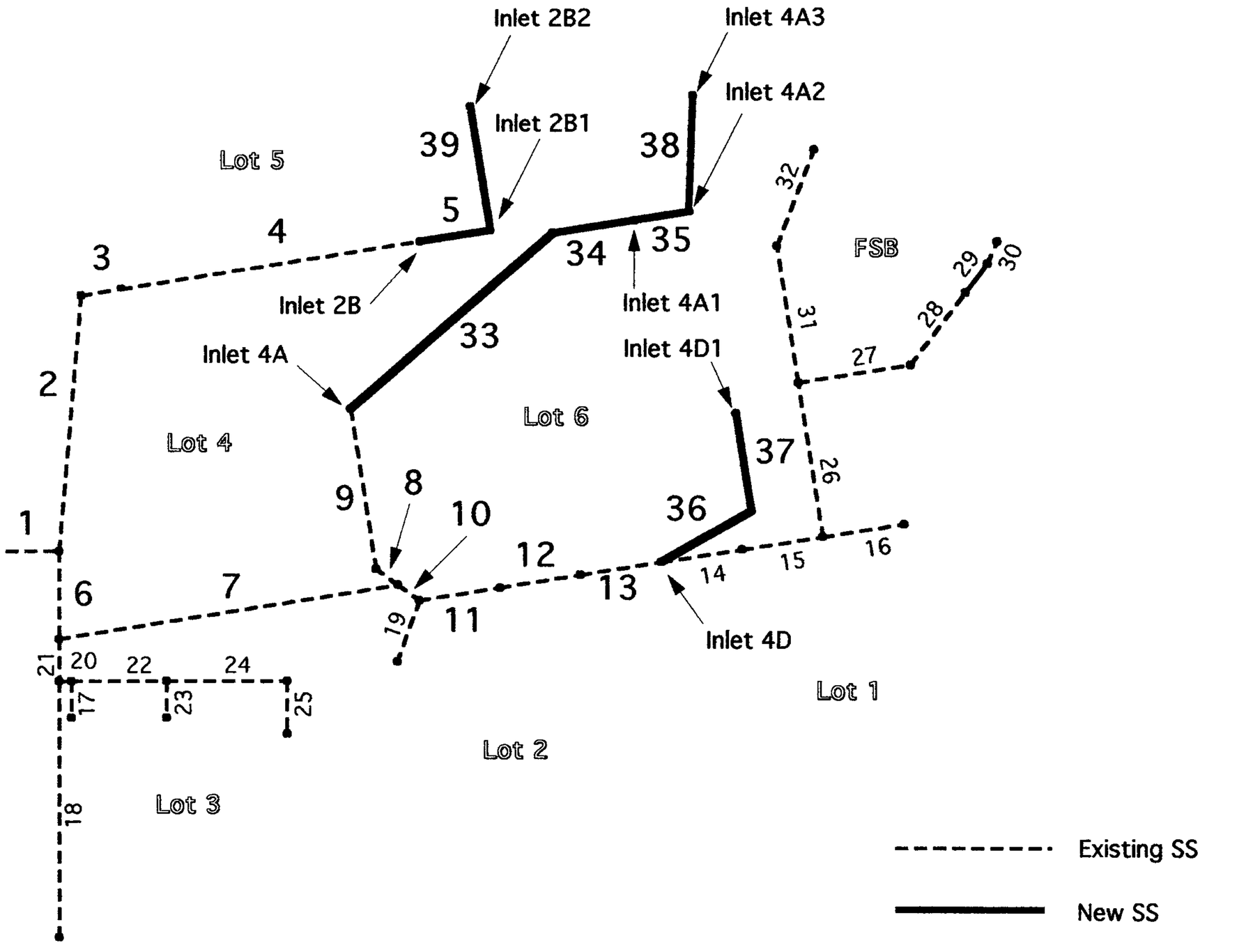
Note Area (A) at left, is based on the open area of a single COA Albuquerque Grate. Based on calculations shown, a single inlet with a head of 0 5' will accept 16.34 cfs If the inlet becomes 50% clogged, at an h = 0.5', the inlet will accept 8.2 cfs. To be used in paved areas.

Calculations

The following storm sewer data reflects conditions for existing buildings on Lot 5 and the FSB area, along with Lots 3 and 6A with approved drainage/grading plans. Flow rates from undeveloped areas have been entered based on the JCMD.

The summary data reflects the entire JC II SS system, with only the reaches directly affected by the development of Lot 6 shown on the P & P sheets. All other lines were checked and verified for these flow conditions, but not shown graphically.

At the time of this report, total flow entering the Vineyard Channel is 130.9 cfs, vs the projected rate of 149 cfs established by the JCMD. This data will be updated as each new undeveloped lot establishes plans to determine flow patterns for its sub-basin.


Inlet 2B2
Inlet 4A3
Inlet 4A2
Inlet 2B1
39
38
Lot 5
5
4
3
34
35
32
FSB
29
30
28
31
27
Inlet 2B
Inlet 4A1
33
Inlet 4A
Inlet 4D1
2
Lot 6
Lot 4
37
26
9
8
10
36
1
12
16
15
14
13
6
7
11
19
Inlet 4D
21
20
22
24
Lot 1
17
23
25
Lot 2
18
Lot 3
Existing SS
New SS
4
Profiled SS
24
Reference Data

SS Index Map

Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	63.4	0.00	0.00	0.00	0.00	0.00	0.0	8.8	0.0	130.9	174.6	10.73	54	0.79	15.80	15.30	19.44	18.22	0.00	24.00	VA - Inlet 1
2	1	315.3	0.00	0.00	0.00	0.00	0.00	0.0	3.2	0.0	30.70	72.22	5.68	36	1.00	19.55	16.40	21.33	20.84	24.00	25.10	Inlet 1 - 2
3	2	50.0	0.00	0.00	0.00	0.00	0.00	0.0	2.9	0.0	24.70	45.18	8.15	24	3.40	21.50	19.80	23.26	22.10	25.10	25.40	Inlet 2 - 2
4	3	372.0	0.00	0.00	0.00	0.00	0.00	0.0	0.8	0.0	19.70	25.72	7.14	24	1.10	25.80	21.70	27.37	23.42	25.40	29.00	Inlet 2A - 2
5	4	50.0	0.00	0.00	0.00	0.00	0.00	0.0	0.6	0.0	13.70	17.33	5.75	24	0.50	26.25	26.00	27.60	27.50	29.00	30.50	Inlet 2B - 2
6	1	108.4	0.00	0.00	0.00	0.00	0.00	0.0	8.2	0.0	85.15	137.8	6.80	48	0.78	17.25	16.40	21.14	20.84	24.00	27.00	Inlet 1 - 3
7	6	422.0	0.00	0.00	0.00	0.00	0.00	0.0	5.8	0.0	66.90	77.07	6.95	42	0.50	19.36	17.25	23.45	21.86	27.00	29.00	Inlet 3 - 4
8	7	32.8	0.00	0.00	0.00	0.00	0.00	0.0	4.9	0.0	11.50	173.9	1.72	36	5.79	21.70	19.80	24.21	24.20	29.00	29.00	Inlet 4 - MH
9	8	200.0	0.00	0.00	0.00	0.00	0.00	0.0	3.8	0.0	11.50	24.50	4.75	24	1.00	24.00	22.00	25.20	24.25	29.00	31.00	MH 1 - Inlet
10	7	32.8	0.00	0.00	0.00	0.00	0.00	0.0	5.6	0.0	42.90	69.10	6.54	36	0.91	21.70	21.40	24.19	24.20	29.00	29.00	Inlet 4 - MH
11	10	100.0	0.00	0.00	0.00	0.00	0.00	0.0	5.1	0.0	42.10	85.46	8.93	30	3.70	25.70	22.00	27.88	24.81	29.00	32.00	MH2 - Inlet
12	11	100.0	0.00	0.00	0.00	0.00	0.00	0.0	4.5	0.0	36.10	44.43	8.41	30	1.00	27.00	26.00	29.01	28.08	32.00	33.00	Inlet 4B - 4
13	12	100.0	0.00	0.00	0.00	0.00	0.00	0.0	4.0	0.0	30.10	44.43	7.70	30	1.00	28.30	27.30	30.13	29.18	33.00	34.00	Inlet 4C - 4
14	13	100.0	0.00	0.00	0.00	0.00	0.00	0.0	3.4	0.0	22.00	28.99	7.46	24	1.40	30.00	28.60	31.66	30.56	34.00	35.00	Inlet 4D - 4
15	14	100.0	0.00	0.00	0.00	0.00	0.00	0.0	2.9	0.0	19.00	24.50	7.39	24	1.00	31.30	30.30	32.84	31.81	35.00	35.50	Inlet 4E - 4
16	15	100.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.00	11.38	1.91	18	1.00	32.60	31.60	33.72	33.67	35.50	36.30	Inlet 4F - 4
17	6	52.0	0.00	0.00	0.00	0.00	0.00	0.0	1.9	0.0	10.75	29.40	3.42	24	1.00	19.52	19.00	21.93	21.86	27.00	27.20	Pappas SS1
18	17	315.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.70	27.12	4.01	24	0.85	22.20	19.52	23.24	22.11	27.20	27.20	Pappas SS2
19	10	80.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.80	2.01	1.47	10	0.50	23.40	23.00	24.87	24.81	29.00	31.70	10E Seafood
20	17	15.0	0.00	0.00	0.00	0.00	0.00	0.0	1.8	0.0	2.05	3.82	3.76	10	1.80	19.80	19.53	22.19	22.11	27.20	28.80	10 NRD
21	20	45.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.60	1.90	1.10	10	0.44	20.00	19.80	22.43	22.41	28.80	29.70	10W Cantina

Project File: JClot6.stm	I-D-F File: JCII.IDF	Total number of lines: 39	Run Date: 02-23-2000

NOTES: Intensity = 80.06 / (Tc + 10.70) ^ 0.83; Return period = 100 Yrs. ; Initial tailwater elevation = 18.22 (ft)

Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
22	20	118.0	0.00	0.00	0.00	0.00	0.00	0.0	1.2	0.0	1.45	4.06	3.27	10	2.03	22.20	19.80	22.74	22.41	28.80	28.50	10 NRD
23	22	45.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.65	1.90	1.41	10	0.44	22.40	22.20	22.99	22.97	28.50	30.70	10 E Cantina
24	22	148.0	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	0.80	4.05	2.31	10	2.03	25.20	22.20	25.60	22.97	28.50	30.40	10 NRD
25	24	65.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.80	1.93	2.61	10	0.46	25.50	25.20	25.90	25.75	30.40	31.70	10W Seafood
26	15	192.0	0.00	0.00	0.00	0.00	0.00	0.0	1.8	0.0	13.00	11.61	7.36	18	1.04	33.60	31.60	36.18	33.67	35.50	42.00	Fsb 1
27	26	138.0	0.00	0.00	0.00	0.00	0.00	0.0	1.0	0.0	4.00	8.63	5.36	12	3.48	38.40	33.60	39.25	37.02	42.00	42.30	Fsb1E
28	27	111.0	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	2.30	2.83	4.28	10	0.99	39.50	38.40	40.28	39.62	42.30	43.50	Fsb2E
29	28	45.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	1.50	1.65	4.30	8	1.11	40.00	39.50	40.73	40.32	43.50	43.50	Fsb3E
30	29	30.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.50	1.57	4.30	8	1.00	40.30	40.00	41.14	40.86	43.50	42.30	Fsb4E
31	26	170.0	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	9.00	11.71	5.09	18	1.06	35.40	33.60	38.09	37.02	42.00	38.40	Fsb1W
32	31	127.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.40	6.62	6.88	12	2.05	38.00	35.40	40.00	38.27	38.40	41.00	Fsb2W
33	9	296.0	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	11.50	10.62	6.51	18	0.87	26.58	24.00	28.68	25.65	31.00	36.00	Inlet 4A - M
34	33	110.0	0.00	0.00	0.00	0.00	0.00	0.0	1.5	0.0	11.50	11.38	6.51	18	1.00	27.68	26.58	30.10	28.97	36.00	35.30	MH - Inlet 4
35	34	78.0	0.00	0.00	0.00	0.00	0.00	0.0	1.1	0.0	10.90	11.38	6.17	18	1.00	28.46	27.68	30.91	30.20	35.30	34.50	Inlet 4A1 -
36	13	110.0	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	5.10	9.08	2.89	18	0.64	29.00	28.30	30.78	30.56	34.00	36.00	Inlet 4D - M
37	36	121.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.10	10.34	3.31	18	0.83	30.00	29.00	31.08	30.89	36.00	34.00	MH - Inlet 4
38	35	198.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.90	9.90	5.04	18	0.76	29.96	28.46	32.72	31.50	34.50	34.00	Inlet 4A2 -
39	5	100.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.00	8.04	3.40	18	0.50	26.75	26.25	28.45	28.17	30.50	29.30	Inlet 2B2 -

Project File: JClot6.stm	I-D-F File: JCII.IDF	Total number of lines: 39	Run Date: 02-23-2000

NOTES: Intensity = 80.06 / (Tc + 10.70) ^ 0.83; Return period = 100 Yrs. ; Initial tailwater elevation = 18.22 (ft)

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1	VA - Inlet 1	130.9	54 c	63.4	15.30	15.80	0.789	18.22	19.44	1.40	End
2	Inlet 1 - 2	30.70	36 c	315.3	16.40	19.55	0.999	20.84	21.33	0.77	1
3	Inlet 2 - 2A	24.70	24 c	50.0	19.80	21.50	3.400	22.10	23.26	0.17	2
4	Inlet 2A - 2B	19.70	24 c	372.0	21.70	25.80	1.102	23.42	27.37	0.13	3
5	Inlet 2B - 2B1	13.70	24 c	50.0	26.00	26.25	0.500	27.50	27.60	0.57	4
6	Inlet 1 - 3	85.15	48 c	108.4	16.40	17.25	0.784	20.84	21.14	0.73	1
7	Inlet 3 - 4	66.90	42 c	422.0	17.25	19.36	0.500	21.86*	23.45*	0.75	6
8	Inlet 4 - MH 1	11.50	36 c	32.8	19.80	21.70	5.793	24.20	24.21	0.04	7
9	MH 1 - Inlet 4A	11.50	24 c	200.0	22.00	24.00	1.000	24.25	25.20	0.45	8
10	Inlet 4 - MH 2	42.90	36 c	32.8	21.40	21.70	0.915	24.20	24.19	0.62	7
11	MH2 - Inlet 4B	42.10	30 c	100.0	22.00	25.70	3.700	24.81	27.88	0.20	10
12	Inlet 4B - 4C	36.10	30 c	100.0	26.00	27.00	1.000	28.08	29.01	0.17	11
13	Inlet 4C - 4D	30.10	30 c	100.0	27.30	28.30	1.000	29.18	30.13	0.43	12
14	Inlet 4D - 4E	22.00	24 c	100.0	28.60	30.00	1.400	30.56	31.66	0.15	13
15	Inlet 4E - 4F	19.00	24 c	100.0	30.30	31.30	1.000	31.81	32.84	0.83	14
16	Inlet 4F - 4G	3.00	18 c	100.0	31.60	32.60	1.000	33.67	33.72	0.07	15
17	Pappas SS1	10.75	24 c	52.0	19.00	19.52	1.000	21.86*	21.93*	0.18	6
18	Pappas SS2	8.70	24 c	315.0	19.52	22.20	0.851	22.11	23.24	0.43	17
19	10E Seafood	0.80	10 c	80.0	23.00	23.40	0.500	24.81*	24.87*	0.03	10
20	10 NRD	2.05	10 c	15.0	19.53	19.80	1.800	22.11*	22.19*	0.22	17
21	10W Cantina	0.60	10 c	45.0	19.80	20.00	0.444	22.41*	22.43*	0.02	20
22	10 NRD	1.45	10 c	118.0	19.80	22.20	2.034	22.41	22.74	0.23	20
23	10 E Cantina	0.65	10 c	45.0	22.20	22.40	0.444	22.97	22.99	0.04	22
24	10 NRD	0.80	10 c	148.0	22.20	25.20	2.027	22.97	25.60	0.15	22
25	10W Seafood	0.80	10 c	65.0	25.20	25.50	0.462	25.75	25.90	0.15	24
26	Fsb 1	13.00	18 c	192.0	31.60	33.60	1.042	33.67*	36.18*	0.84	15
27	Fsb1E	4.00	12 c	138.0	33.60	38.40	3.478	37.02	39.25	0.37	26
28	Fsb2E	2.30	10 c	111.0	38.40	39.50	0.991	39.62	40.28	0.04	27
29	Fsb3E	1.50	8 c	45.0	39.50	40.00	1.111	40.32*	40.73*	0.13	28
30	Fsb4E	1.50	8 c	30.0	40.00	40.30	1.000	40.86*	41.14*	0.29	29
31	Fsb1W	9.00	18 c	170.0	33.60	35.40	1.059	37.02*	38.09*	0.18	26
32	Fsb2W	5.40	12 c	127.0	35.40	38.00	2.047	38.27*	40.00*	0.73	31

Project File: JClot6.stm | I-D-F File: JCII.IDF | Total No. Lines: 39 | Run Date: 02-23-2000

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Summary Report

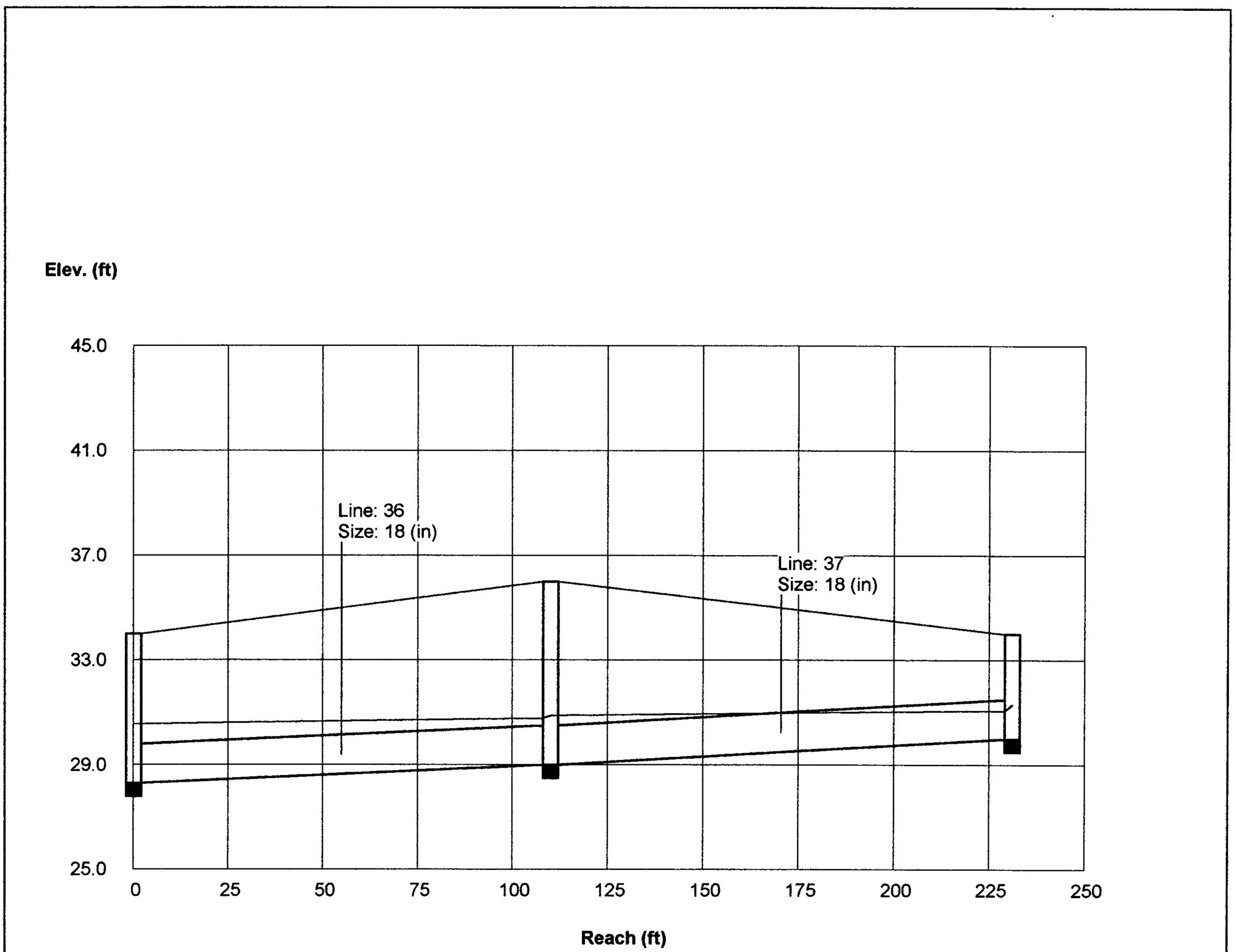
Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
33	Inlet 4A - MH	11.50	18 c	296.0	24.00	26.58	0.872	25.65*	28.68*	0.30	9
34	MH - Inlet 4A1	11.50	18 c	110.0	26.58	27.68	1.000	28.97*	30.10*	0.10	33
35	Inlet 4A1 - 4A2	10.90	18 c	78.0	27.68	28.46	1.000	30.20*	30.91*	0.59	34
36	Inlet 4D - MH	5.10	18 c	110.0	28.30	29.00	0.636	30.56*	30.78*	0.11	13
37	MH - Inlet 4D1	5.10	18 c	121.0	29.00	30.00	0.826	30.89	31.08	0.22	36
38	Inlet 4A2 - 4A3	8.90	18 c	198.0	28.46	29.96	0.758	31.50*	32.72*	0.39	35
39	Inlet 2B2 - 2B3	6.00	18 c	100.0	26.25	26.75	0.500	28.17*	28.45*	0.18	5

Project File: JClot6.stm	I-D-F File: JCII.IDF	Total No. Lines: 39	Run Date: 02-23-2000

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

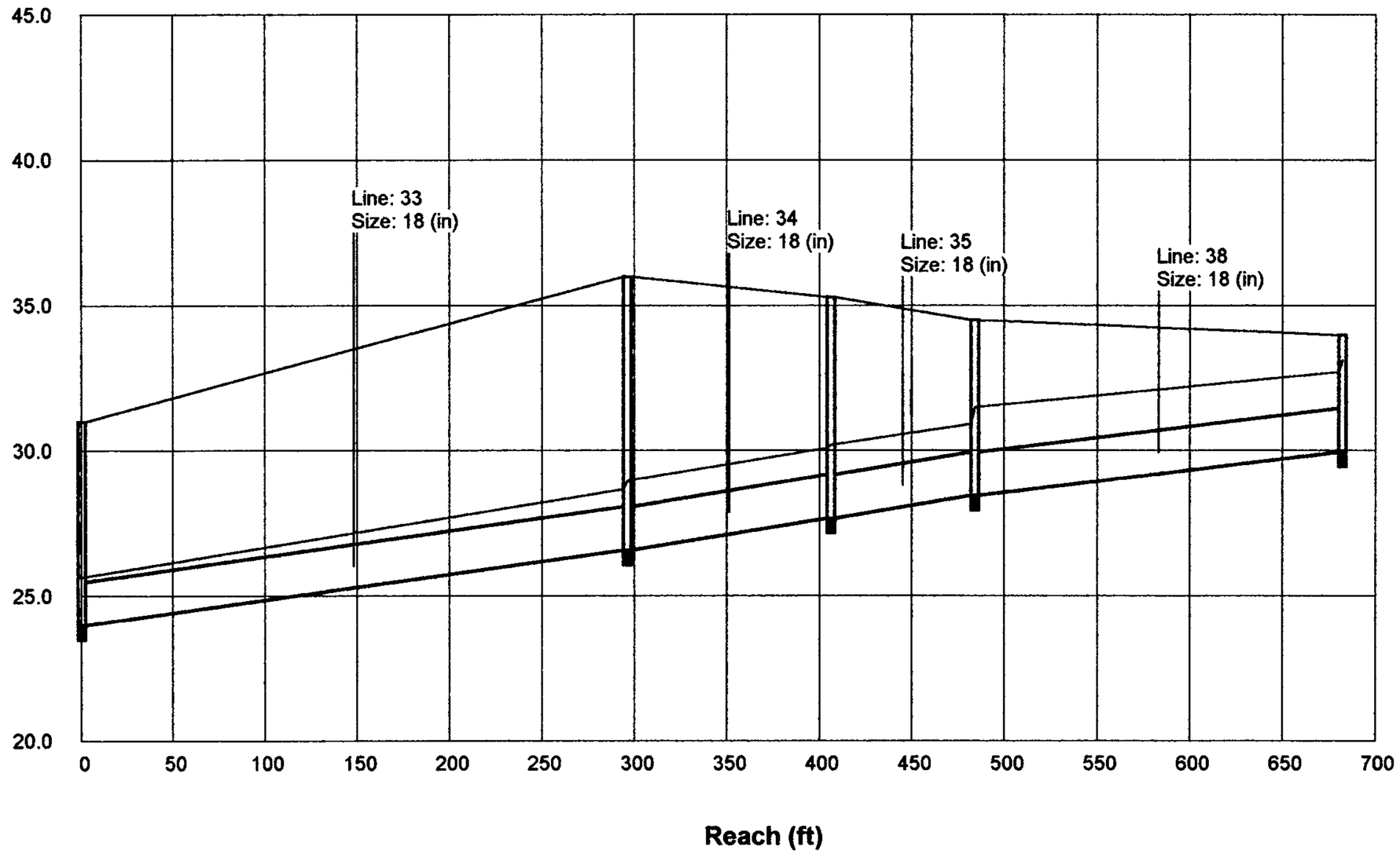
Storm Sewer Profile

Proj. file: JClot6.stm



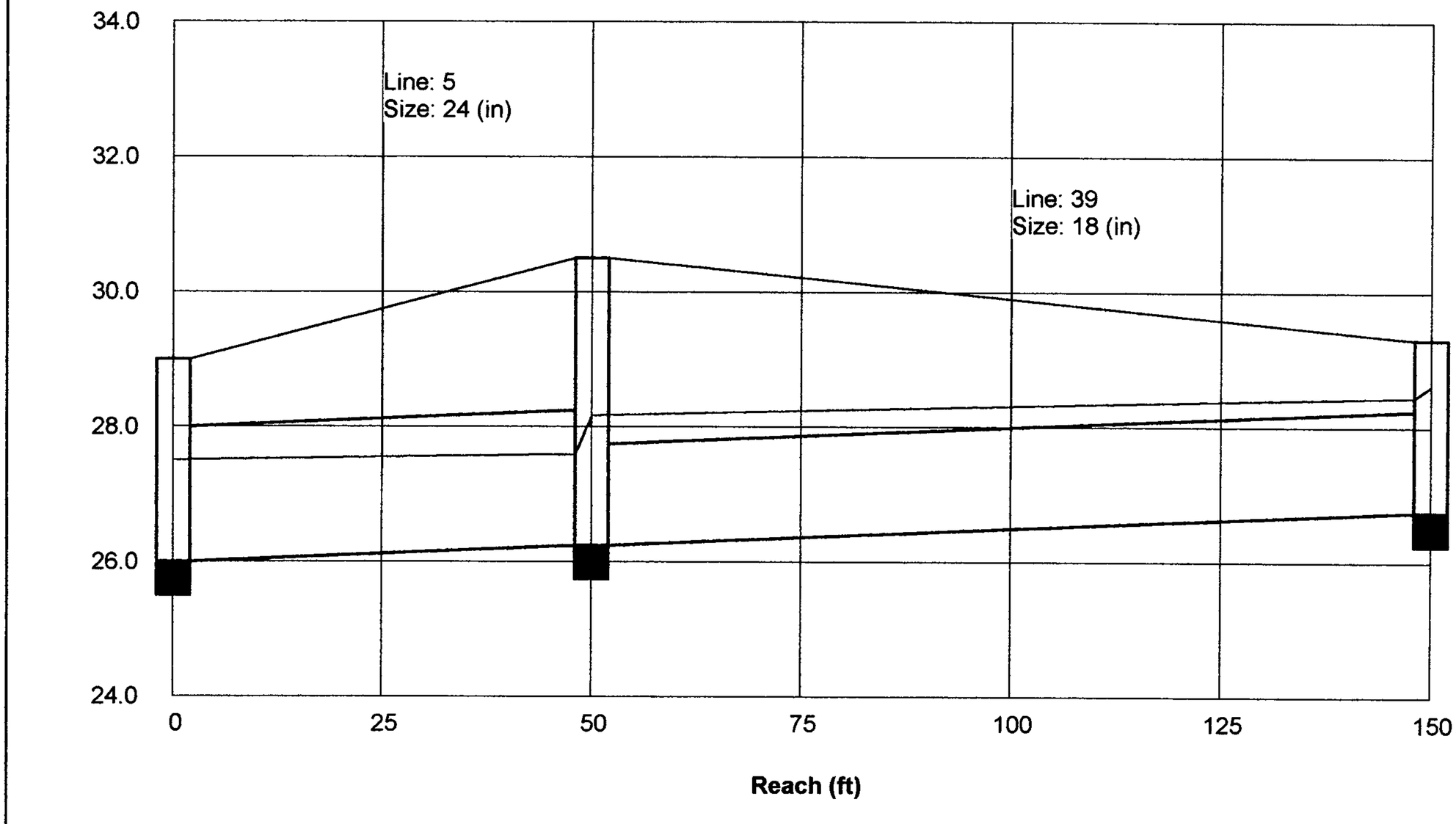
Storm Sewer Profile

Proj. file: JClot6.stm



Storm Sewer Profile

Proj. file: JClot6.stm



Summary of Results

Drainage management within Lot 6 will be handled by a combination of the surface drainage across parking and access areas to be picked up by the private SS system, with final discharge into the Vineyard Channel system.

Parking/Access Areas:

- Where flows concentrate on pavement with less than a 1% slope, it is recommended that concrete valley gutters be installed to control the grades and eliminate low spots in the flow paths. Where flows are carried against a curb, a curb/gutter section should be used. All other curbs can be extruded or header curbs

SS Requirements:

- Sediment control geotextile fences should be used during the all phases of construction to control silting from all newly disturbed areas.

- Each SS inlet should be completely surrounded by silt fences at all times until site improvements are completed and the ground surface stabilized with pavement or other treatments. Wash-down from cement trucks should never be allowed to drain into the SS system.

- An operating and maintenance schedule should be established for the parking lot SS system to insure long term reliability.

- Inspections and maintenance accessed through the inlets and MH's will insure that sediment and debris are not reducing the effective opening of the pipe(s).

- Failure to properly maintain these SS systems could result in uncontrolled flooding and damage to adjacent buildings during storm events.

After Every Storm -

- Conduct inspections of all inlets, MH's and outlets.
- Clear all inlet grates of any debris to insure maximum opening efficiency.
- Flush or jet out any inlet/pipe sediment buildup using high pressure flow.

DRAINAGE INFORMATION SHEET

PROJECT TITLE: :Jefferson Commons II - Lot 5 ZONE ATLAS / DRNG. FILE #: F-17 : D63

LEGAL DESCRIPTION: A portion of Parcel 3 - Digital Properties, Albuquerque, NM 5601 Office Blvd NE

CITY ADDRESS: N/A

ENGINEERING FIRM: C.L. Weiss Engineering CONTACT: Chris Weiss

ADDRESS: P.O. Box 97, Sandia Park NM, 87047 PHONE: 281-1800

OWNER: Chant and Associates CONTACT: Greg Chant

ADDRESS: 5501 Midway Park Pl. NE PHONE: 344-1633

ARCHITECT: Berent Groth CONTACT: Berent Groth

ADDRESS: 1100 Alvarado Dr. NE PHONE: 266-6700

SURVEYOR: Forstbauer Surveying Co. CONTACT: Ron Forstbauer

ADDRESS: 1100 Alvarado Dr. NE - 87110 PHONE: 268-2112

CONTRACTOR FIRM: N/A CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

_____YES

_____NO

_____COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97366

EPC NO. 9720

PROJ. NO. _____

TYPE OF SUBMITTAL:

_____DRAINAGE REPORT

_____DRAINAGE PLAN

_____CONCEPTUAL GRADING & DRAINAGE PLAN

_____GRADING PLAN

_____EROSION CONTROL PLAN

__X__ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT

_____PRELIMINARY PLAT

_____SITE DEVELOPMENT PLAN

_____FINAL PLAT

_____BUILDING PERMIT

_____FOUNDATION PERMIT

__X__CERT. OF OCCUPANCY

_____ROUGH GRADING PERMIT

_____GRADING / PAVING PERMIT

_____OTHER_____

DATE SUBMITTED: September 10, 1998

BY: C.L. Weiss Engineering, Inc.

30 day temp. 9/11/98

CITY OF
Albuquerque
Public Works Department

October 21, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Christopher L. Weiss, P.E.
P.O. Box 97
Sandia Park, NM 87047

RE: MASTER PLAN FOR JEFFERSON COMMONS PHASE 2 (F17-D63), DRAINAGE REPORT FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED SEPTEMBER 29, 1997.

Dear Mr. Weiss:

Based on the information provided on your September 30, 1997 submittal, the above referenced project is approved for Site Development Plan for Building Permit.

I am assuming that you do not intend to subdivide this property, otherwise, cross lot drainage easements will be required.

Concurrent with or prior to the first development, the storm drain system must be constructed to the outfall (storm drain system in Office Blvd.) It appears that a 54-inch line that is stubbed from the storm sewer line in Office Boulevard to your site is existing. If this line is to be constructed, a Work Order Permit will be required.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

F17/D63

R WARD HUNNICUTT, CHAIRMAN
PAT D HIGDON, VICE-CHAIRMAN
REX FUNK, SECRETARY-TREASURER
DANIEL W. COOK, DIRECTOR
RONALD D BROWN, DIRECTOR

LARRY A BLAIR
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N E - ALBUQUERQUE N M 87107
TELEPHONE (505) 884-2215

RECEIVED
MAY 2 [illegible] 1989
HYDROLOGY SECTION

May 22, 1989

Mr. Fred Sanchez
Albuquerque Surveying Company
2119 Menaul Blvd. NE
Albuquerque, New Mexico 87107

RE: Plat of Parcel 3, Digital Properties

Dear Fred:

AMAFCA has reviewed the plat for Parcel 3, Digital Properties and has determined that this area is subject to AMAFCA's Drainage Policy (Resolution No. 1980-15). Because this plat is not creating a new parcel, AMAFCA's requirement for a contour map and drainage report can be deferred until the time when a site development plan is prepared. Approval of plats and site development plans within the City of Albuquerque is normally through AMAFCA's designee at the City, Mr. Fred Aguirre.

We note that a portion of this site is within a 100-year flood boundary as shown on the National Flood Insurance Program "Flood Insurance Rate Map" (Community Panel No. 350002 0016c). This flood boundary is partially outside of the "field location of existing drainage" as shown on the plat. Unless an updated drainage study is prepared, which shows that the existing flood map is not accurate, the 100-year flood boundary should be included as an easement on the plat.

The future development of this site will require special consideration of downstream drainage. The Vineyard Arroyo downstream of Parcel 3 is not within a public easement. The earth and riprap channel of the Vineyard Arroyo is experiencing erosion problems under existing conditions. Development of Parcel 3 should not aggravate existing conditions.

Future dedication of public drainage easements and construction of channel improvements on the Vineyard Arroyo would relieve drainage constraints. No schedule or source of funding for improvements has been identified at this time.

Sincerely,

Clifford E. Anderson, PE & LS
Drainage Engineer

cc: Fred Aguirre, Hydrologist, City of Albuquerque, PWD

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 20, 1990

Ms. Rae A. Van Hoven
State Highway Department
Drainage Section
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

RE: DRAINAGE PLAN FOR WEST FRONTAGE ROAD WEST CHANNEL & OFFICE BOULEVARD NORTH CHANNEL (F-17/D63)

Dear Ms. Van Hoven:

I have reviewed the referenced submittal and forward the following comments:

1. Your last submittal made changes to the rainfall, CN values and runoff. Please correct the original report to indicate these recent changes and justification for the CN values used.

2. Please locate the proposed channel with repsect to property lines, existing roadway, culverts, right-of-ways, and existing floodplains.

3. Please address the affect on channel stability downstream of the 2 - 60 inch CMP's as a result of this proposed channel project.

4. Please provide us with a copy of the as-builts for Office Boulevard.

5. Include the 2 - 60' CMP's in your HEC-II run, and also include all your assumptions.

6. As discussed at our last meeting on February 8, 1990, the following are the two hydrology models we are willing to accept for your calculation of the "Q":

   A. the 1983 Bohannan-Huston HYMO and the rainfall distribution which was used at that time; and,

B. Cliff Anderson's new HYMO, which we gave you a copy of for your use, and the revised Section 22.2 of the DPM.

7. Please address the question of erosive velocities in the unlined position of the channel. As was discussed at our meeting, the City's maximum channel velocity for unlined channels is 3 ft/sec and the maximum channel side slope is 3 to 1.

If you should have any questions regarding these comments, please call me at 768-3961.

Cordially,

Carlos A. Montoya, P.E.
C.E./Project Review

CAM/bsj
(WP+1293)

NEW MEXICO STATE HIGHWAY
AND TRANSPORTATION DEPARTMENT
AN EQUAL OPPORTUNITY EMPLOYER

RECEIVED
SEP 07 1989
HYDROLOGY SECTION

GARREY CARRUTHERS
GOVERNOR

COMMISSION

Willie Ortiz
Chairman, Santa Fe

J. V. "Rip" Curtis
Vice-Chairman, Clovis

Mary Jean Christensen
Secretary, Gallup

Jack Westman
Member, Albuquerque

Dr Donald Reif
Member, Clayton

Quentin Ford
Member, Las Cruces

DEPARTMENT

Secretary
Dewey Lonsberry

General Office
P O Box 1149
Santa Fe, N M.
87504-1149
505-827-5100

District One Office
P.O.Box 231
Deming, N M
88031-0231
505-546-2603

District Two Office
P O. Box 1457
Roswell, N.M.
88202-1457
505-624-3300

District Three Office
P O Box 3768
Station D
Albuquerque, N.M
87190-3768
505-841-2700

District Four Office
P O. Box 30
Las Vegas, N M
87701-0030
505-425-7527

District Five Office
P.O. Box 4127
Coronado Station
Santa Fe, N.M
87502-4127
505-827-9500

District Six Office
P.O. Box 2159
Milan, N.M.
87021
505-285-6623

September 5, 1989

Mr. Fred Aguirre, Chief
Hydrology Division
City of Albuquerque
400 Marquette NW
Albuquerque, NM 87102

Subject: Hydrology and Hydraulic Analysis of the West Channel on SB Frontage Road and the North Channel on Office Boulevard, southwest of Jefferson Interchange in Albuquerque.

Dear Fred:

We have made a detailed drainage study of the improvement of the west channel on South Bound Frontage Road and the north channel on Office Boulevard, southwest of Jefferson Interchange. Presented below is a summary of the results of our analysis and design recommendations.

The contributing drainage basins are composed of developed areas of businesses and residential. Soils and hydrologically classified as "B".

To calculate the amount of runoff that is coming to this location, the "Soil Conservation Service Peak Rates of Discharge for Small Watersheds" computational method and 100 year frequency flow were used in the design.

The expected 100 year-24 hour rainfall is 2.16 inches as determined from the U.S. Weather Bureau rain gage data for station 5-234 in Albuquerque with over 39 years of record. In addition, the "Amafca Design Guidelines and criteria for channels and hydraulic structures and "HEC 2" computational methods were used for the hydraulic analysis of the channel.

The As-Built Plans and drainage report for Project No. IR-025-4(65)223 prepared by Denney-Gross & Associates, Inc. were used to establish the location of existing structures and drainage areas.

There are 2 culverts which discharge runoff into the north end of the west channel on SB Frontage Road. 1-36" RCP under west Jefferson Boulevard takes runoff from the northwest of the interchange with a drainage area of 43 Ac. and through 1-48" RCP which crosses I-25 and takes runoff from the northeast of the interchange with a drainage area of 87.5 Ac.

There used to be 1-30" RCP at Station 282+20 and 1-36" RCP at Station 274+60 which crossed I-25 before the construction of Jefferson Interchange which then discharged into the Digital property through a culvert across Singer Road. These drainage basins are currently diverted into the 1-48" RCP which made up the 87.5 Ac.

The channel improvement starts at the southwest corner of the Interchange with an estimated 100 year flow of 153 cfs which runs south along SB Frontage Road, then it turns 90° west along north side of Office Boulevard for 527′ long into the inlet of 2-60" CMP's which is the west end of the channel improvement. There are 3-36" RCP's which cross I-25 at the intersection of Office Boulevard and takes runoff from the east of I-25 with a drainage area of 141 Ac. The estimated flow at this bend is 254 cfs through the end of the channel at the 2-60" CMP's inlet with a total drainage area of 309 Ac. The expected 100 year headwater depth at the inlet of 2-60" CMP's is 5.6′.

The recommended trapezoidal channel dimensions are 8 foot bottom width with 4:1 side slopes along the roadside and 2:1 side slopes along the west side on SB Frontage Road channel while on the north channel of Office Boulevard are 15 foot bottom width with 4:1 south side slopes and 2:1 north side slopes. Channel slopes is 0.003 ft./ft. with concrete lined drop structures at several locations, please refer to the Water Surface Profile sheet for locations. The expected maximum channel velocity is 4.5 fps along the unlined portion.

Attached herewith are copies of the calculations, HEC-2 runs, Water Surface Profile sheet and channel detail sheet.

Your review and approval of this report and design concept are hereby requested. Upon completion of the final construction plans, submittal will be made for your final consideration.

If you have any questions, please feel free to contact me at 872-5323.

Sincerely,

Ronald E. Gaines

Ronald E. Gaines
Drainage Engineer

REG:RVH:ilc

cc: L.D. Duffy
Mark Dow, Legal, Digital Corp.
Hugh Parry, Legal Section
Carlos Montoya, Public Works w/att.
Fred Sanchez
Iqbal Awan, Water Surface Profile & Detail sheets encl.

CITY OF Albuquerque

Martin J. Chávez, Mayor

November 24, 1997

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

RE: MASTER PLAN FOR JEFFERSON COMMONS PHASE 2 (F17-D63). DRAINAGE REPORT FOR PRELIMINARY AND FINAL PLAT. ENGINEER'S STAMP DATED NOVEMBER 14, 1997.

Dear Mr. Weiss:

Based on the information provided on your November 17, 1997 submittal, the above referenced project is approved for Preliminary and Final Plat. Prior to DRB sign off, AMAFCA's concurrence will be required.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

TO: ANDREW GARCIA 924-3864

City of Albuquerque

Public Works Department

October 21, 1997

Martin J. Chávez, Mayor

Robert L. Gurulé, Director

Christopher L. Weiss, P.E.
P.O. Box 97
Sandia Park, NM 87047

RE: MASTER PLAN FOR JEFFERSON COMMONS PHASE 2 (F17-D63). DRAINAGE REPORT FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED SEPTEMBER 29, 1997.

Dear Mr. Weiss:

Based on the information provided on your September 30, 1997 submittal, the above referenced project is approved for Site Development Plan for Building Permit.

I am assuming that you do not intend to subdivide this property, otherwise, cross lot drainage easements will be required.

Concurrent with or prior to the first development, the storm drain system must be constructed to the outfall (storm drain system in Office Blvd.) It appears that a 54-inch line that is stubbed from the storm sewer line in Office Boulevard to your site is existing. If this line is to be constructed, a Work Order Permit will be required.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

Jefferson Commons II

ALBUQUERQUE, NM

SUBDIVISION OF LOTS 1 - 6

- Background
- Basin Analysis
- Summary of Results
- Storm Sewer System
- Plat

November 1997

C. L. Weiss Engineering, Inc.

Background

Existing Site

The Jefferson Commons II site is located north of I-25, surrounded by Jefferson St. on the east, Singer Blvd. on the north and Office Blvd. on the west. The 35 acre site is one of the few remaining undeveloped tracts in the immediate area (See Panorama Photo - Site Photos). No improvements have been made to alter the original topography, except for some light grading for a baseball field located in the northern portion of the site.

The SS Map shows the existing topography, which reflects the historic drainage paths formed by offsite/onsite flows. Successive upstream street and SS improvements have intercepted all contributing basins and have isolated the site from offsite storm runoff.

- When Jefferson Street was originally named Kircher Ave., the street alignment gave priority to funneling traffic west onto Singer Blvd., with Kircher Ave. forming a "T" intersection for northbound traffic. Offsite flows previously flooded this intersection, some of which followed Singer Blvd. to the west and some of which crossed the site to flow toward the Vinyard Arroyo. When Kircher Ave. was realigned to give priority to northbound traffic and renamed Jefferson Street, Singer Blvd. became the "T" intersection, with a high point constructed just west of the intersection to serve as a water block for Singer Blvd. Now flows collecting in the Jefferson St./Singer Blvd. intersection are surface routed a short distance south by the Jefferson St. curb and gutter to a series of inlets for capture into a SS system which outflows into the Vineyard Arroyo (See Photo #9 for Jefferson St. inlets). All offsite flows which previously drained down Singer Blvd. or crossed the site are presently intercepted by these inlets.

- The SS system is situated in an easement within the site, generally following the alignment of the Jefferson St. and I-25 Frontage roads before turning north at Office Blvd., and turning west again into the Vineyard Arroyo (See SS Map). This SS system was funded and constructed by AMAFCA and designed by Greiner Engineers (Reference: AMAFCA Vineyard Arroyo). The open channel portion of the Vineyard Arroyo at the outfall of the SS has been recently improved from an unlined arroyo to a concrete lined trapezoidal section, extending from the box culvert to the North Diversion Channel inlet (See Photos #3 & 4)

Storm runoff leaving the site historically found outflows into the North Diversion Channel at either the Vineyard Arroyo junction or other inlets to the north. Downstream developments have now routed all flows to defined points at the outfall from Commons Ave. and the Vineyard Arroyo

- Commons Ave. Outlet: Flows from Singer Blvd., and adjacent businesses along the north side of the street, travel west in Singer Blvd. to the intersection with Office Blvd., then south in Office Blvd. to the intersection with Commons Ave. Street flows combine with drainage from the northern portion of the site, which crosses at a dip section in Office Blvd. at the intersection with Commons Ave. (See Photos # 5 &6). Flows are then routed west within Commons Ave. to a rundown inlet into the North Diversion Channel (See Photos #7 & 8);

- Vineyard Arroyo. The remaining site drainage is picked up at an existing pipe culvert in the SW region of the site on the east side of Office Blvd. (See Photo #2). This pipe is connected to the SS box culvert which drains to the Vineyard Arroyo. Storm drainage from the site either follows the existing arroyos to the pipe or is intercepted by the Office Blvd. roadside swales. Street flows are picked up by curb and gutter installed on the west side of the street and routed to a SS inlet located north of the culvert crossing point (See Photo #1).

Basin Analysis

Proposed Site

The development of the Jefferson Commons II site will proceed in stages as each lot within the overall tract is defined by the purchaser's needs, as to building shape and space requirements. Each drainage basin will be defined by the platted lot dimensions, with each lot draining to specific easements providing drainage access across adjoining areas. At this stage, the Site Plan for Subdivision has defined the overall intent as to general land use for Lots 1 - 5 (See Basin Map). More specifically as to land use, Lot 1 is planned for a hotel, Lots 2 through 4 will be occupied by restaurants, while Lots 5 and 6 will be marketed for office clusters. Lots 3 and 5 will be the first two areas to be developed, and as such, have specific building outlines, finished floor elevations and traffic layouts established. Regarding traffic patterns, the office tracts will be separated from the restaurant/hotel area by a 12' wide landscaped buffer zone, with vehicular access crossing at only a few controlled locations.

The land use densities have been established based on the COA requirements for building space, parking requirements and landscaping ratios. Essentially, a ratio of 20% (Land Treatment B) previous and 80% (Land Treatment D) impervious is a realistic design goal. Referencing the Greiner analysis for the Digital Tract A, the anticipated developed flow rate of 127 cfs was generated based on 0% Land Treatment A, 20% Land Treatment B, and 10% Land Treatment C and 70% Land Treatment D. (Reference: Greiner Report - Basin 900, Area = 31.3 ac., Q100 = 127.2 cfs). For the purpose of comparisons, the calculations will reflect both design assumptions, but the final values will depend entirely on the actual construction plans for each lot. Minor peak flow variations to the master plan may occur for each basin, but there is an adequate safety factor to allow for these fluctuations due to a 20% freeboard equivalent factor for the box culvert downstream capacities (Reference: Greiner Report - Exhibit 3).

With these factors in mind, this analysis will present realistic guidelines for follow-up approvals of individual drainage construction plans, notwithstanding minor variations in the final flow rates.

The lot/basin-by-basin narrative will provide general guidelines to help coordinate adjacent lot developments within the site. Rim elevations (See Natural Grnd column) on the Storm Sewer Inventory Report are for general reference to insure that the basin parameters are maintained and that flows are not misdirected to an area unprepared to handle additional storm runoff.

- Basin 1 - Lot 1 will drain to the landscape buffer zone common with Basin 6, with flows being collected at inlets situated along the landscaped zone. The development of this lot will require the construction of a the SS Lines # 10 - 16 to intercept these flows, which will additionally provide drainage inlets for Lot 2 and portion of Lot 6.

- Basin 2. - Lot 2 will drain to the landscape buffer zone common with Basin 6, with flows being collected at inlets situated along the landscaped zone. If the development of this lot occurs first, it will require the construction of the SS Lines # 10 - 13 to intercept these flows, which will provide a future connection point for Lot 1 and the upper portion of Lot 6.

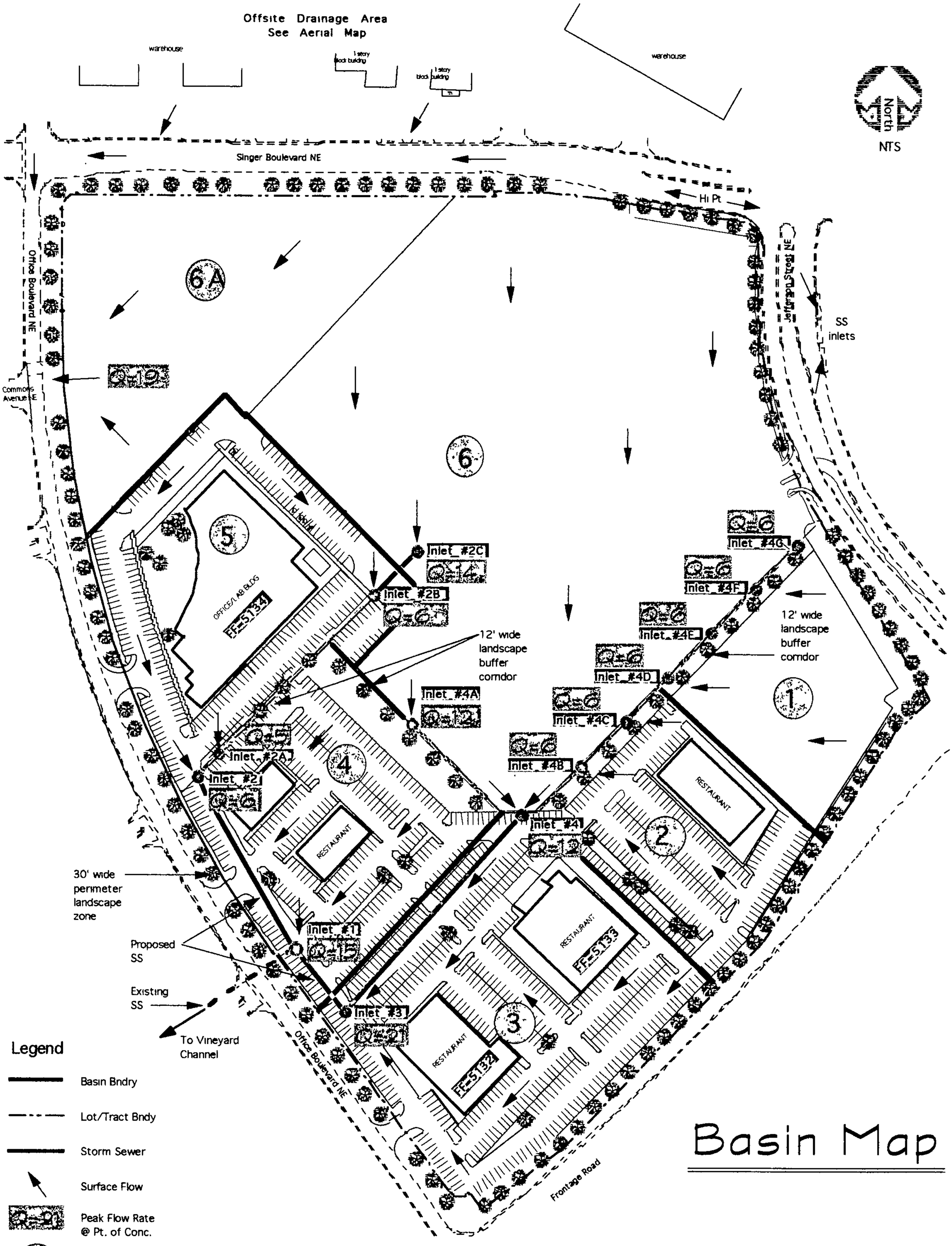
- Basin 3. - Lot 3 will be one of the first areas to be developed within the overall tract and will require the construction of the southern leg of the site SS Lines #6 - 7. This reach will handle Lot 3 flows and provide an outlet for Lots 1, 2 and a majority of Lot 6. Flows from Lot 3 will be routed across the parking areas to Inlet #3 and also picked up by a small SS extension needed to intercept roof flows and area drains from each building.

- Basin 4. - This area will surface drain directly to the private SS system Inlet #1, which will be connected to the existing 60" culvert crossing Office Blvd.

- Basin 5. - Lot 5 will be the first area to be developed within the overall tract and as such, will require the construction of the northern leg of the site SS Lines #1 - 5. This reach will handle Lot 5 flows and runoff from a portion of Lot 6. The portion of Lot 6 which drains toward the common boundary with Lot 5 will be directed to Inlet #2C located within Lot 6, rather than surface draining to the Lot 5 collection inlets. All flows will be routed to the existing Office Blvd. culvert to discharge into the Vineyard Arroyo SS system.

- Basin 6A. - A portion of Lot 6's natural flow path will outfall into the dip section in Office Blvd. Runoff from this area will pass through Jefferson Commons, Phase I, Basin B, via Commons Street to a concrete channel rundown into the North Diversion Channel (See Photos #5, 6, 7 & 8) See Basin 6A calculations - comments - about downstream capacities. The Greiner Report also acknowledged this corner of the tract would not be picked up by the Vineyard Arroyo system (See Aerial Map - Basin 900)

- Basin 6. - Flows from Lot 6 will be intercepted at numerous locations. Inlet #2C will collect flows from the area adjacent to Lot 5 and will be constructed as part of the Lot 5 development. Inlet #4A will collect flows from the area adjacent to Lot 4. The development of this portion of Lot 6 will require the construction of a the SS Lines #8 - 9 to intercept these flows at Inlet #4A. The remainder of Lot 6 will be intercepted by Inlets #4B - 4G situated along the landscape zone. The SS lines #10 - 16 will be constructed by the first adjacent lot to be developed along this reach, either Lot 6 or Lots 1 & 2.


Offsite Drainage Area
See Aerial Map
warehouse
1 story block building
1 story block building
warehouse
North
NTS
Singer Boulevard NE
Hi Pt
Jefferson Street NE
SS inlets
Office Boulevard NE
Commons Avenue NE
6A
Q=19
6
5
OFFICE/LAB BLDG
FF=5134
Inlet_#2C
Q=14
Inlet_#2B
Q=6
12' wide landscape buffer corridor
Inlet_#4A
Q=12
Q=6
Inlet_#4G
Q=6
Inlet_#4F
Q=6
Inlet_#4E
Q=6
Inlet_#4D
12' wide landscape buffer corridor
1
Q=6
Inlet_#4C
Q=6
Inlet_#4B
Q=5
Inlet_#2A
Inlet_#2
Q=6
4
RESTAURANT
RESTAURANT
Inlet_#4
Q=12
2
30' wide perimeter landscape zone
Inlet_#1
Q=15
Proposed SS
Existing SS
Inlet_#3
Q=21
3
RESTAURANT
FF=5133
RESTAURANT
FF=5132
To Vineyard Channel
Office Boulevard NE
Frontage Road
Legend
Basin Bndry
Lot/Tract Bndry
Storm Sewer
Surface Flow
Q=21
Peak Flow Rate @ Pt. of Conc.
3
Basin/Lot #

Basin Map

Summary of Results

Drainage management within Basin 6A will involve surface routing across the parking/access areas to the dip section at Office Blvd. & Commons Ave. The developed discharge rate may have to be a controlled release, depending on available downstream capacity (See Basin 6A calcs).

Drainage management within Basins 1 through 6 will be surface routed to a series of SS inlets situated along the lot boundaries and in the landscape buffer zones, for free discharge into the Vineyard Arroyo system.

- Parking/Access Areas:
  Where flows concentrate on pavement with less than a 1% slope, it is recommended that concrete valley gutters be installed to control the grades and eliminate low spots in the flow paths. Where flows are carried against a curb, a curb and gutter section should be used. All other curbs can be extruded or header curbs.

- Landscape Buffer Zones:
  The type of landscape material should be adjusted to accommodate the potential of surface flow erosion. While the SS system will be extended out along each landscape leg to reduce the effect of concentrated flows, small diameter gravel associated with SW style landscaping and plastic lining should be restricted to areas not impacted by concentrated flows. For areas dealing with erosive potential, large cobbles, sod or erosion fabrics should be incorporated into the project. Additional protection should be be considered along pavements, footings and curbs to prevent undercutting of improvements.

Main Storm Sewer System (Lines #1, 2, 6 and 7)
The main SS system will be constructed as part of the initial development to serve as the drainage "framework" for the overall tract. This system will be "fixed in place", thus establishing an outfall system from which all the proposed future lots will be provided a connection for either the secondary SS lines or private internal lot systems which pick up roof flows, etc.

Inlet #1: This drop inlet will have 15 sf open grate area available, combined with the junction structure, and be located in the access street area.. The outlet (Line #1), a 54" RCP, will connect to the existing 60" lateral from the box culvert section of the Vineyard Arroyo system.

Inlet #2: This drop inlet will have 5.1 sf open grate area available, combined with the junction structure, and be located in the access street area. It will serve as the juncture structure for the secondary line located in the landscape zone which will be

constructed as part of the development of Lot 5. The outlet (Line #2), a 36" MP, will drain to Inlet #1.

Inlet #3: This drop inlet will have 5.1 sf open grate area available, combined with the junction structure, and be located in the access street area. This junction will also serve as the outfall point for a small SS extension needed to intercept roof flows and area drains from each building in Lot 3 The outlet (Line #6), a 48" MP, will drain to Inlet #1.

Inlet #4: This drop inlet will have 8 sf open grate area available, and be located in the access drive which crosses the landscaped buffer zone. It will serve as the juncture structure for two secondary lines (SS Lines #8 & 9, and #10 - 16) located in the landscape zones and constructed as part of the development of either Lot 6 or Lots 1 & 2. The outlet (Line #7), a 42" MP, will drain to Inlet #3.

When the curb and gutter is completed on the east side of Office Blvd., an additional single inlet will be needed to pick up the low spot established by the existing pavement. This inlet will match the existing system located on the west curb located north of the 60" lateral (See Photo #1) A 12" dia. lateral connected to existing MH serving the west drop inlet will handle the street flows.

Secondary Storm Sewer System (Lines #3 - 5, and 8 - 16)
The secondary SS system will be constructed as adjoining lots are scheduled for development. All easements for the SS system will be granted with the plat and the infrastructure agreements will provide the guarantees for future construction, but the system will not be "fixed in place", thus providing a flexibility for drainage variations which will arise from meeting the needs of a specific site plan.

Inlets 2A - 2C: These drop inlets will serve as collection points for flows from Lot 5 and a portion of Lot 6 which adjoins Lot 5. Inlets 2A and 2B will be located within the landscape zone and will function in sump conditions to interrupt any channelization of flows and prevent surface carryover to the next downstream inlet. Inlet 2C will be positioned within Lot 6 to intercept future parking/access surface flows.

Inlet 4A. - This drop inlet will serve as a collection point for the portion of Lot 6 which adjoins Lot 4. Surface flows will drain to the landscape buffer zone for interception by this inlet, which is situated at a mid-point on the lot boundary.

Inlets 4B - 4G. - These drop inlets will serve as collection points for flows from both sides of the landscape buffer zone, with Lots 1, 2 and 6 contributing to the SS system. All of these inlets will be located within the landscape buffer zone and are planned to function in sump conditions, thereby keeping surface flow concentrations within the landscape zone to a minimum.

SINGER BLVD. NE

COMMONS AVE.

JEFFERSON ST.

OFFICE BLVD. NE

Jefferson
Commons
Phase I

Jefferson
Commons
II

Movie
Theaters

I - 25 FRONTAGE RD.

INTERSTATE 25

North
NTS

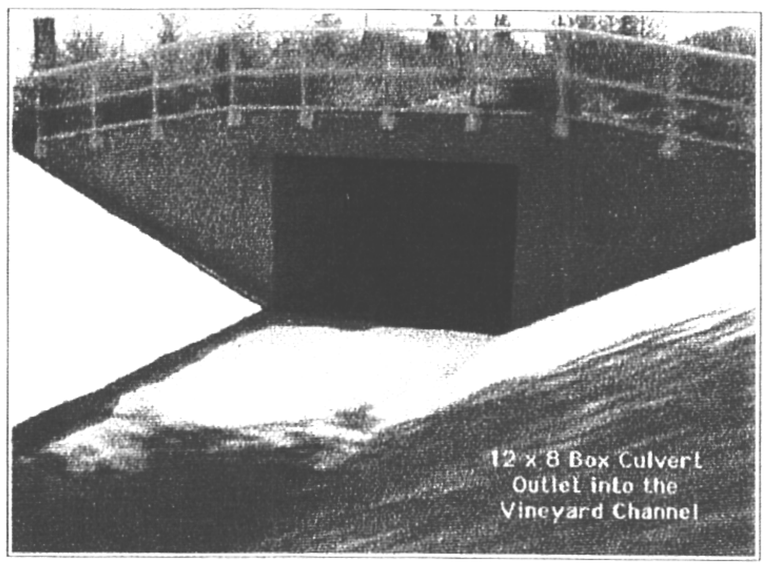
1 2 3 4 5 6 7 8 9 P

Photo Index

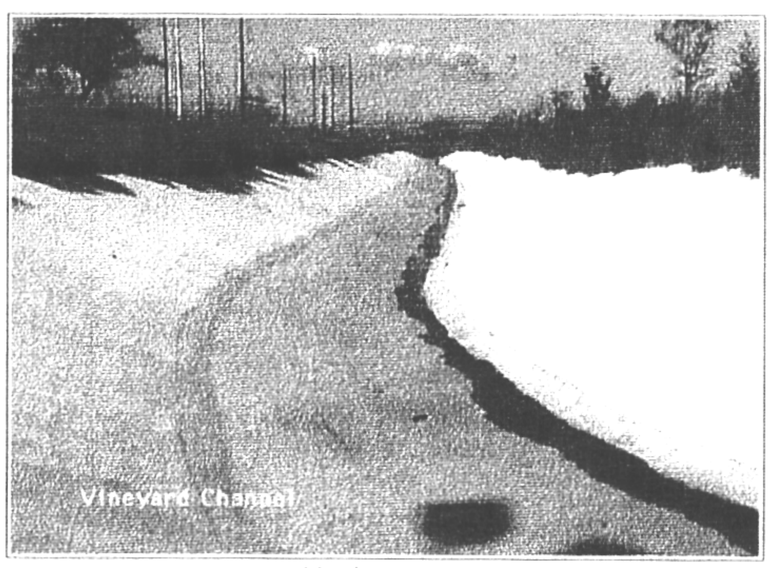
Site Photos

#1

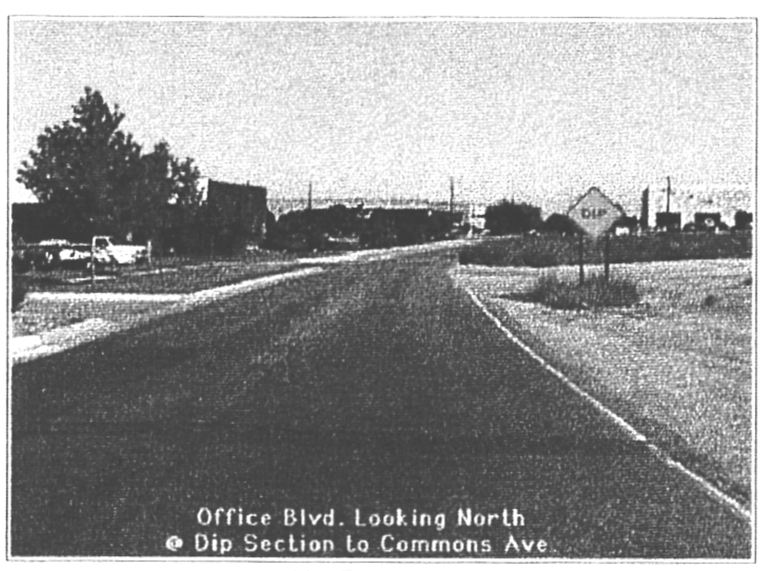
#2



#3



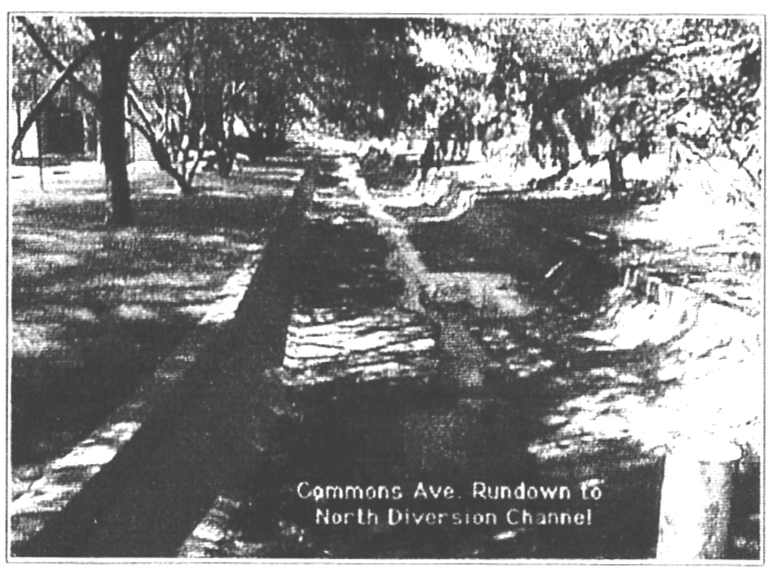
#4



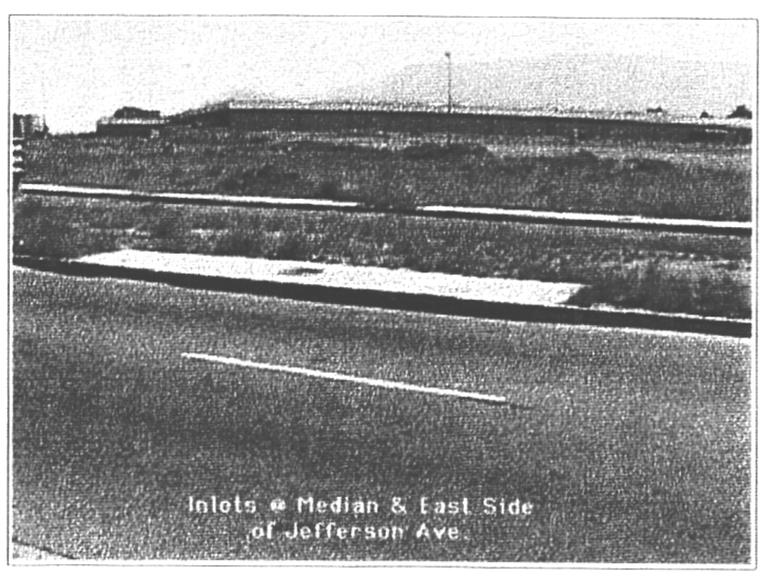
#5

#6

#7



#8



#9

Panorama looking North & East

Calculations

The following calculations address the future developed conditions for the Jefferson Commons II Subdivision, encompassing the first phases presently established for Lots 3 and 5.

Two defined drainage outflows for the tract have been established:

- The first outfall involves the northwest corner of the tract. On-site flows combine with runoff with the Singer Blvd. basin at the Office Blvd./Commons Ave. intersection, and are routed west within the existing downstream street/rundown to the North Diversion Channel.

- The second outfall point drains the remaining portion of the development, which is divided into six basins. Runoff is planned to surface drain across future access/parking areas and be collected by a private SS system, which will be connected to the Vineyard Arroyo drainage system at Office Blvd.

Basin #1

AREA OF SITE: 113,296 SF = 2.6 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	22,659	SF
Area c	=	11,330	SF
Area d	=	79,307	SF
Total Area	=	113,296	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	22,659	SF
Area c	=	0	SF
Area d	=	90,637	SF
Total Area	=	113,296	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	=	1.85 in.

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

MP V360	=	16551	CF	Developed V360	=	17485 CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14
Qbb	=	2.28		Qpd	=	4.70
MP Qp	=	10.6	CFS	Developed Qp	=	11.0 CFS

Basin #1 will drain onto the adjoining landscape buffer zone, with flows intercepted by lines 14 - 16 of the SS system. Four drop inlets, 4D through 4G, will be available to pick up the runoff. If development of Lot 1 precedes other downstream lot activity, the SS system lines #10 through 16 will have to be installed concurrently with Lot 1. Flows within the lot can be routed across the surface by way of the access and parking areas or picked up with extensions of the SS system into the lot area. Should there be any cross drainage onto Lot 2, appropriate easements will have to be established between the respective lot owners.

Drop inlets within the landscaping area are planned to function in a sump condition, with a minimum head of 0.5'. The inlet grate to be used will be the Neenah Model # R4346, with an open area of 4.7 sf. Assuming a 50% clogging factor, available open area would be 2.4 sf, for a capacity of up to 8 cfs / inlet. Flow distribution of the inlets in the landscape zone was designed at 6 cfs / inlet, so each inlet will have adequate capacity under the most severe clogging conditions.

Basin #2

AREA OF SITE: 109,253 SF = 2.51 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	21,850	SF
Area c	=	10,925	SF
Area d	=	76,478	SF
Total Area	=	109,253	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	21,850	SF
Area c	=	0	SF
Area d	=	87,403	SF
Total Area	=	109,253	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75 in.	Developed E	=	1.85 in.

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

MP V360	=	15960 CF	Developed V360	=	16861 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70
MP Qp	=	10.2 CFS	Developed Qp	=	10.6 CFS

Basin #2 will drain onto the adjoining landscape buffer zone, with flows intercepted by lines 10 - 13 of the SS system. Two drop inlets, 4B and 4C, will be available to pick up the runoff. If development of Lot 2 precedes any portion of Lot 6, the SS system lines #10 through 13 will have to be installed concurrently with Lot2. Flows within the lot can be routed across the surface by way of the access and parking areas or picked up with extensions of the SS system into the lot area. Should there be any cross drainage onto Lot 3, appropriate easements will have to be established between the respective lot owners.

Total flow to the landscape zone from Lots 1, 2 and a portion of Lot 6 will approach 51 cfs. Distribution among the 6 inlets in the landscape zone provides an interception rate of 6 cfs/ inlet. Inlet #4, located in the access drive at the lowest point of the landscape zone, has an interception capacity of 12 cfs and will provide the final interception for any overflow from the upstream series of inlets.

Basin #3

AREA OF SITE: 220,853 SF = 5.07 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	44,170	SF
Area c	=	22,085	SF
Area d	=	154,598	SF
Total Area	=	220,853	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	44,170	SF
Area c	=	0	SF
Area d	=	176,683	SF
Total Area	=	220,853	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75 in.	Developed E	=	1.85 in.

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

MP V360	=	32263 CF	Developed V360	=	34085 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70
MP Qp	=	20.6 CFS	Developed Qp	=	21 4 CFS

Basin #3 drains directly to the private SS system Inlet #3, which will be situated in the center of the access street, and be combined into the juncture MH used for the change in direction of the SS line from Line #6 to Line #7 All flows within the basin will either travel to the inlet on the surface by way of the access and parking areas, or be picked up with extensions of the SS system into the lot area. Roof flows and half the parking area will be intercepted by an extension of a private SS. The surface discharge to inlet #3 will be reduced by approximately 12 cfs.

Based on calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 9 cfs of surface flow from the basin would be 2 6 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted (Ref: HEC-12,Section 8.1, Federal Highway Admin.) Therefore, a total open grate area of 5.2 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 5.1 s f (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

Basin #4

AREA OF SITE: 156,127 SF = 3.58 Ac.

Greiner Master Plan flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	31,225	SF
Area c	=	15,613	SF
Area d	=	109,289	SF
Total Area	=	156,127	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	31,225	SF
Area c	=	0	SF
Area d	=	124,902	SF
Total Area	=	156,127	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	=	1.85	in.

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

MP V360	=	22808	CF	Developed V360	=	24096	CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14	
Qbb	=	2.28		Qpd	=	4.70	
MP Qp	=	14.6	CFS	Developed Qp	=	15 1	CFS

Basin #4 drains directly to the private SS system Inlet #1, which is connected to the Vineyard Arroyo at Office Blvd. All flows within the basin will travel to the inlet on the surface by way of the access and parking areas.

Based on the previous calculations of an inlet situated in a 0 5' sump condition, the open grate area necessary to capture 15.1 cfs of surface flow from the basin would be 4.4 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted. Therefore, a total open grate area of 8.9 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of15 sf (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

Basin #5

AREA OF SITE: 173,563 SF = 3.98 Ac.

Greiner Master Plan Flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	34,712	SF
Area c	=	17,356	SF
Area d	=	121,495	SF
Total Area	=	173,563	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	34,712	SF
Area c	=		SF
Area d	=	138,851	SF
Total Area	=	173,563	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75 in.	Developed E	=	1.85 in.

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

MP V360	=	25355 CF	Developed V360	=	26787 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70
MP Qp	=	16.2 CFS	Developed Qp	=	16.8 CFS

Basin # 5 will discharge approximately half of its runoff onto the surrounding access street around the west side of the building for direct routing to Inlet # 2. Flow within the access street will be approximately 6 cfs. Based on the previous calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 6 cfs of surface flow from the basin would be 1.8 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted. Therefore, a total open grate area of 3.5 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 5.1 sf (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

The remainder of the basin (11 cfs) will drain to a landscape zone bordering the common area with Basin #4 These flows will be picked up by two inlets, Inlet 2A and 2B, located within the landscape zone. Each inlet has the capacity to intercept up to 8 cfs under a 50% clogged condition (See calcs - Basin #1). The final inlet on the SS system serving this area will be Inlet #2C, which will pick up flows from a portion of Lot 6 which lies adjacent to the Lot 5 boundary. Estimated flows from this portion of Lot 6 are 14 cfs. A double inlet will be required for Inlet #2C.

Basin #6

AREA OF SITE: 548,795 SF = 12.6 Ac.

Greiner Master Plan flows:

On-Site MP Land Condition

Area a	=		SF
Area b	=	109,758	SF
Area c	=	54,880	SF
Area d	=	384,157	SF
Total Area	=	548,795	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	109,758	SF
Area c	=	0	SF
Area d	=	439,037	SF
Total Area	=	548,795	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

MP E	=	1.75	in.	Developed E	=	1.85	in.

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

MP V360	=	80170	CF	Developed V360	=	84697	CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14	
Qbb	=	2.28		Qpd	=	4.70	
MP Qp	=	51.2	CFS	Developed Qp	=	53.1	CFS

Basin 6 comprises the largest of the six basins draining to the private SS system. All flows will be directed to one or another of the landscaped buffer zones which boarder the lower portion of the zone. Flows will be directed into the zone to harvest a portion of the runoff for the landscaping, with excess volume being captured by the SS system for routing to the Vineyard Arroyo SS system (See inlet calcs - Basin #1). Both legs of the zone meet at a vehicle access point common with Basin #3, which will be the location for Inlet #4, which serves as the junction structure of the SS lines in the landscape zone. All remaining surface flows which are either not routed to the landscape zone or bypass the other inlets will be picked up by Inlet #4.

Referencing Inlet #4, based on the previous calculations of an inlet situated in a 0.5' sump condition, the open grate area necessary to capture 12 cfs of surface flow from the basin would be 3.5 sf. In order to provide for clogging conditions for a grate in a sump condition, it must be assumed that 50% of the inlet will be restricted. Therefore, a total open grate area of 7 sf will be required to capture this surface discharge. The inlet configured for this structure will have an open area of 8 sf (McNichlos Co, Grate Model # HWE - Custom sized to fit inlet structure. See Structural details).

Estimated flow distribution of Lot 6 has determined a peak flow of 14 cfs intercepting the common boundary of Lot 5, which will be picked up by Inlet #2C (See Basin 5 calcs), and 12 cfs intercepting the common boundary of Lot 4, which will be picked up by Inlet #4A, a double inlet. The remaining runoff from Basin 6 will be intercepted by the SS system common to Lots 1 and 2 (See Basin 1 & 2 calcs)

Total Jefferson Commons II developed runoff from Basins 1 through 6 equals 128 cfs. The Greiner Drainage Master Plan projected a peak flow of 127.2 cfs from Basin 900 (See Aerial Map from Greiner Report). Capacity is available to free discharge into the Vineyard Arroyo system from Basins 1 - 6.

Basin 6A

AREA OF SITE: 197,921 SF = 4.54 Ac.

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

Existing Conditions

On-Site Existing Land Condition

Area a	=	0	SF
Area b	=	138,544	SF
Area c	=	59,376	SF
Area d	=	0	SF
Total Area	=	197,920	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	39,584	SF
Area c	=		SF
Area d	=	158,337	SF
Total Area	=	197,921	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

Existing E	=	0.89	in.	Developed E	=	1.85	in.

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

Existing V360	=	14597	CF	Developed V360	=	30546	CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14	
Qbb	=	2.28		Qpd	=	4.70	
Existing Qp	=	11.5	CFS	Developed Qp	=	19.2	CFS

Basin 6A is located in the northern portion of the site Flows from this area drain to a dip section at the intersection of Office Blvd and Commons Ave. These flows combine with drainage from the Singer Blvd Basin, which is comprised of Singer Blvd and adjacent businesses situated along the north side of the street (See Aerial Map for basin definition). Total flow from the Singer Basin is 44.3 cfs, which, when combined with the developed Basin 6A flows, totals 63.5 cfs at the intersection of Office and Commons Ave. Adding the on-site flows from JC I, Basin B, of 30 cfs, total flow draining to the Commons Ave. rundown would be 93.5 cfs. The original drainage plan for the Commons Ave. rundown planned for a total flow of 67 cfs (Jefferson Commons, Phase I, Drainage Plan, Analysis Point B - Future). Because the Singer Basin and JC I, Basin B areas have been fully developed, total Q100 entering the rundown is presently 74.3 cfs from just these two areas, or 7 cfs in excess of the original design This could be considered to be within an acceptable 10% variation of the accuracy of storm data without raising major concerns about possible flooding at the inlet to the rundown

However, based on the original design parameter's for the capacity of the downstream Commons Ave. drainage system, Basin 6A, JC II, will have to have some degree of detention ponding and controlled release to keep from adding to the flooding potential of the Commons Ave inlet to the rundown (See Photo #8 - Site Photos). A more detailed drainage analysis, based on as-built conditions of the street, dip section and rundown, should be completed to establish the actual capacity of the downstream system when any phase of Basin 6 is scheduled for development .

Singer Blvd. Basin

AREA OF SITE: 457,380 SF = 10.5 Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	91,476	SF
Area c	=	0	SF
Area d	=	365,904	SF
Total Area	=	457,380	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

	Developed E =	1.85 in.

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

	Developed V360 =	70589 CF

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

For Precipitation Zone 2

Qpa = 1.56
Qbb = 2.28
Qpc = 3.14
Qpd = 4.70

0.0	Developed Qp =	44 3 CFS

The Singer Blvd. Basin is comprised of the street area and adjacent businesses located along the north side of the street. Some of the sites drain directly to Singer, while others drain to the rear of the lot, with flows following a common path west to Office Blvd along the north side of the basin. All flows converge at the Office/Singer intersection before flowing south to the Commons Ave intersection.

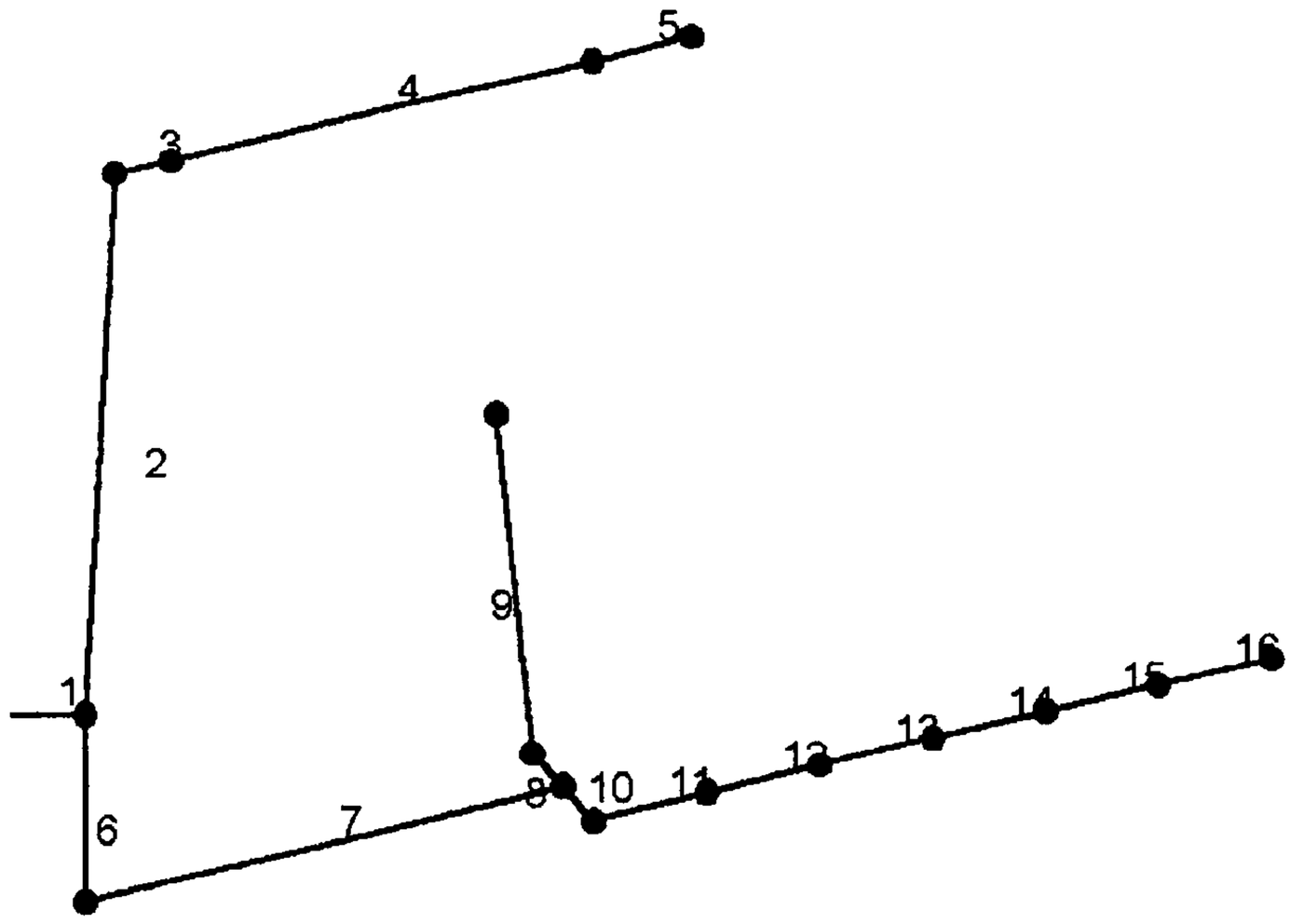
Storm Sewer Inventory Report

Line #	Line ID	DnStr line #	Defl angle (deg)	Line length (ft)	Line size (in)	Line type	Line slope (%)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Known Q (cfs)	Invert El dn (ft)	Invert El up (ft)	N value	Junction type	J-Loss coeff (JLC)	Natural grnd (ft)	Dn line #
1	VA-Inlet 1	0	0	63	54	Circular	0.79	0.00	.00	0	15.1	15.30	15.80	.013	MH	1.0	24.00	Off
2	Inlet 1-2	1	-85	315	36	Circular	1.00	0.00	.00	0	6.0	16.40	19.55	.012	MH	1.0	25.10	1
3	Inlet 2-2A	2	76	50	24	Circular	3.40	0.00	.00	0	5.0	19.80	21.50	.012	MH	1.0	25.40	2
4	Inlet 2A-2B	3	0	372	24	Circular	1.10	0.00	.00	0	6.0	21.70	25.80	.012	MH	1.0	29.00	3
5	Inlet 2B-2C	4	0	87	24	Circular	1.15	0.00	.00	0	14.2	26.00	27.00	.012	MH	1.0	30.00	4
6	Inlet 1-3	1	90	108	48	Circular	1.48	0.00	.00	0	21.4	16.40	18.00	.012	MH	1.0	27.00	1
7	Inlet 3-4	6	-99	422	42	Circular	0.57	0.00	.00	0	12.0	18.60	21.00	.012	MH	1.0	29.00	6
8	Inlet 4-MH	7	-135	33	36	Circular	0.91	0.00	.00	0	0.0	21.40	21.70	.012	MH	1.0	29.00	7
9	MH 1-Inlet	8	45	200	24	Circular	1.00	0.00	.00	0	12.0	22.00	24.00	.013	MH	1.0	31.00	8
10	Inlet 4-MH	7	45	33	36	Circular	0.91	0.00	.00	0	0.0	21.40	21.70	.012	MH	1.0	29.00	7
11	MH2-Inlet 4	10	-45	100	30	Circular	3.70	0.00	.00	0	6.0	22.00	25.70	.012	MH	1.0	32.00	10
12	Inlet 4B-4C	11	0	100	30	Circular	1.00	0.00	.00	0	6.0	26.00	27.00	.012	MH	1.0	33.00	11
13	Inlet 4C-4D	12	0	100	30	Circular	1.00	0.00	.00	0	6.0	27.30	28.30	.012	MH	1.0	34.00	12
14	Inlet 4D-4E	13	0	100	24	Circular	1.40	0.00	.00	0	6.0	28.60	30.00	.012	MH	1.0	35.00	13
15	Inlet 4E-4F	14	0	100	24	Circular	2.70	0.00	.00	0	6.0	30.30	33.00	.012	MH	1.0	39.00	14
16	Inlet 4F-4G	15	0	100	18	Circular	1.00	0.00	.00	0	6.0	33.30	34.30	.012	MH	1.0	40.00	15

PROJECT FILE: JCCMP.STM | I-D-F FILE: JC.IDF | TOTAL NUMBER OF LINES: 16 | RUN DATE: 11-12-

DESIGN CODES: Min. Pipe Size = 12 in; Max. Pipe Size = 96 in; Min. Slope = .2 %; Min. Cover = 2 ft; Inlet N-Values = .016 ; Average Inlet Throat

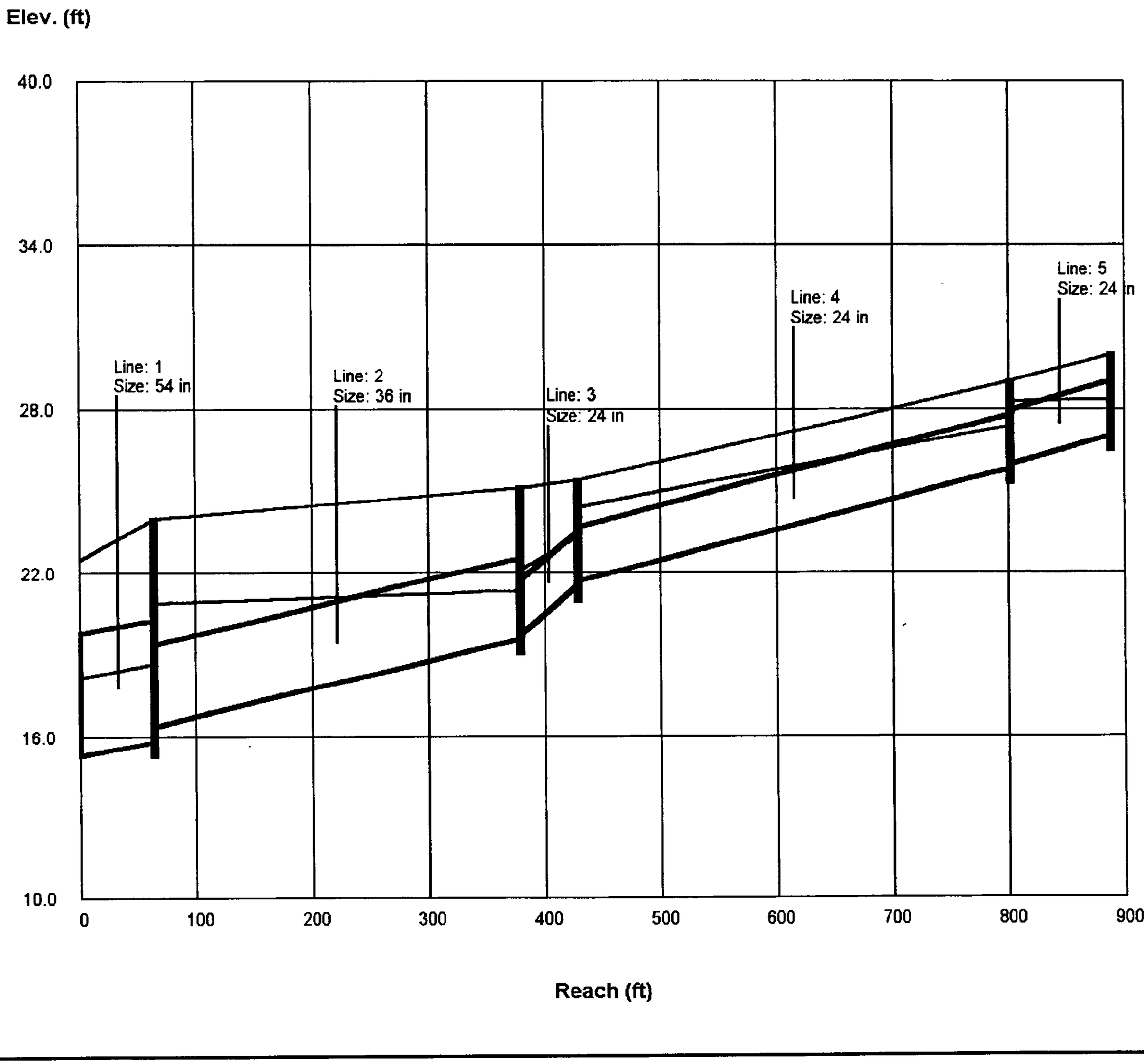
Plan View



Proj. file: JCCMP.STM	IDF file: JC.IDF	No. Lines: 16	11-12-1997

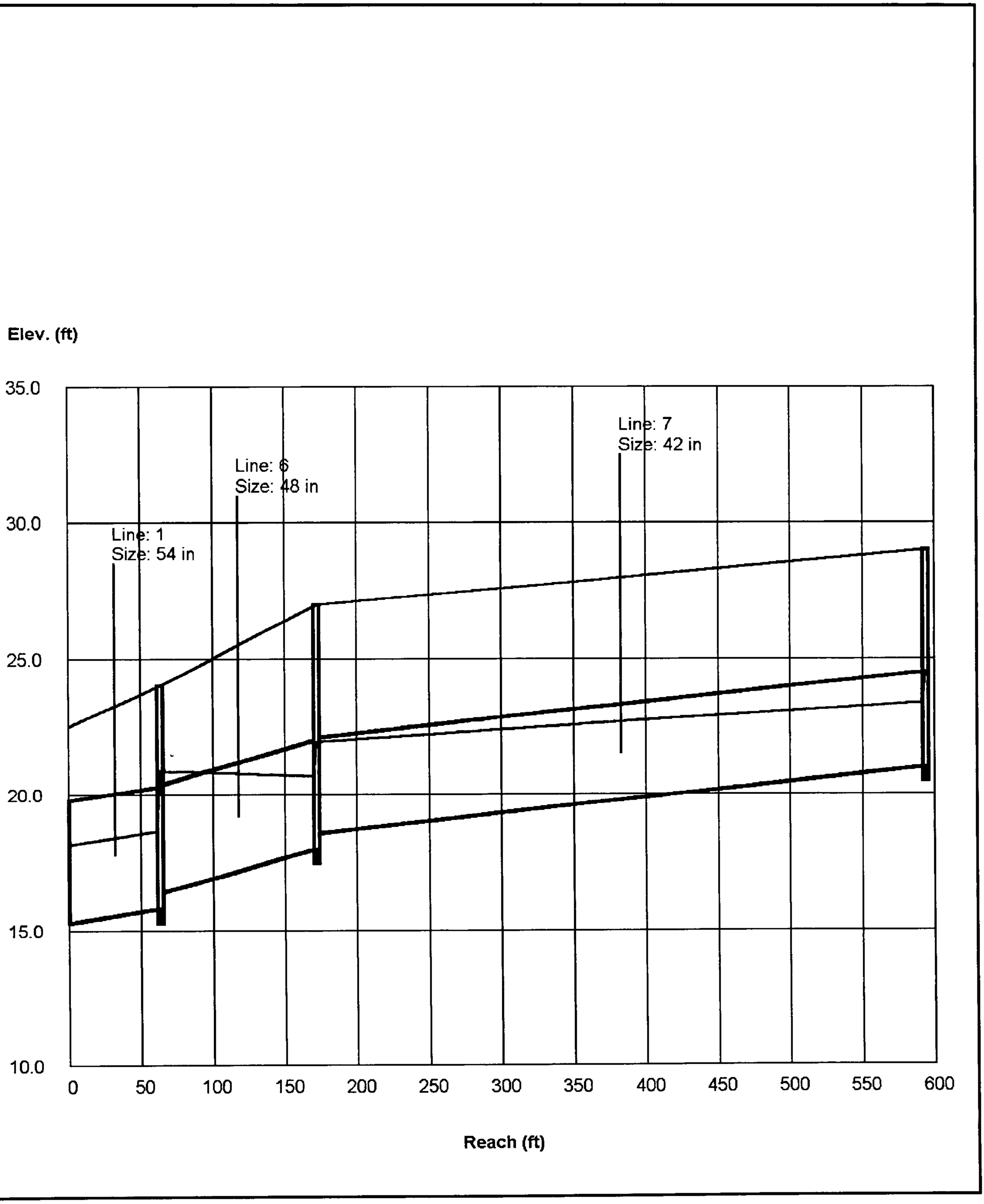
Storm Sewer Profile

Proj. file: JCCMP.STM



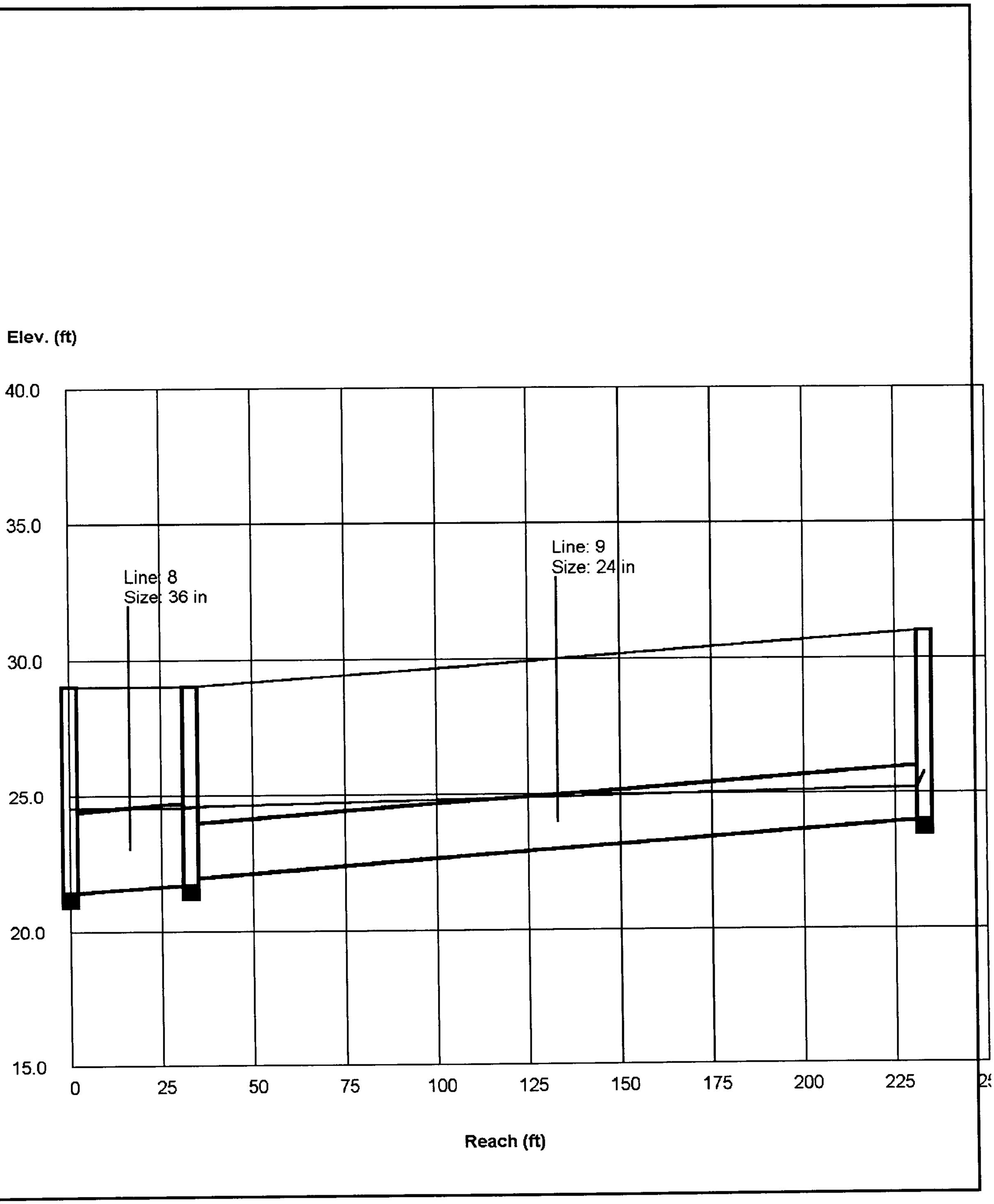
Storm Sewer Profile

Proj. file: JCCMP.STM



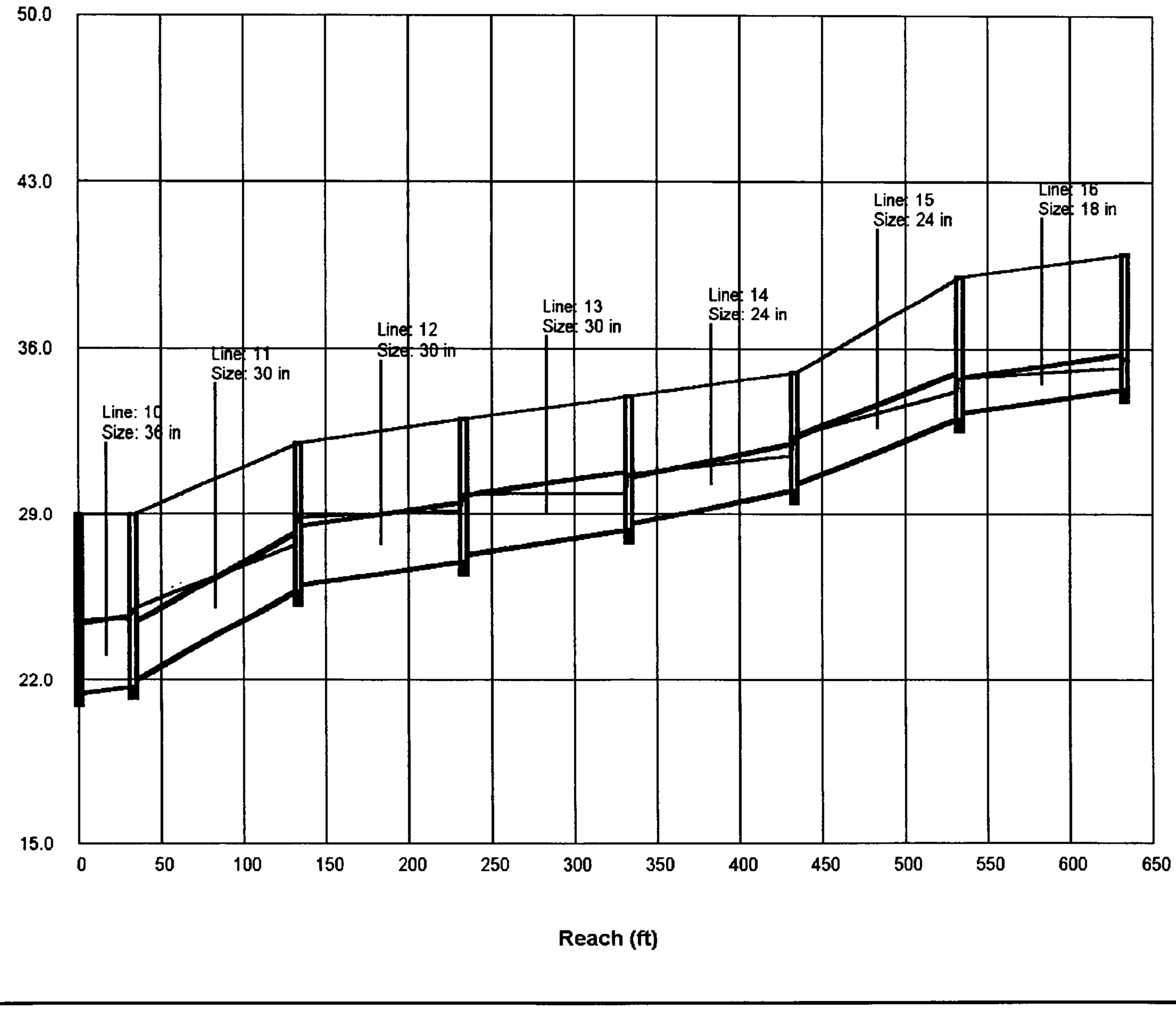
Storm Sewer Profile

Proj. file: JCCMP.STM



Storm Sewer Profile

Proj. file: JCCMP.STM



Line 1 **Q = 127.70** **Size = 54 x 54 (Cir)** **Nv = 0.013** **Len = 63.4** **JLC = 1.00**

VA-Inlet 1 / Outfall

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	15.30	34	18.17	20.38	10.71	11.93	4.33	2.70
Upstrm	15.80	34	18.67	20.88	10.71	11.93	4.33	3.70

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.789
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.789
Time of conc. (min)	= 6.46	Critical depth (in)	= 39
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 24.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 15.10
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 174.70
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to offsite	= 0.00	Width of Flow (ft)	= 0.00

Line 2 **Q = 31.20** **Size = 36 x 36 (Cir)** **Nv = 0.012** **Len = 315.3** **JLC = 1.00**

Inlet 1-2 / Downstream line = 1

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	16.40	36	20.88	21.18	7.07	4.41	0.00	4.60
Upstrm	19.55	22	21.34	22.12	4.41	7.07	2.94	2.55

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.999
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.298
Time of conc. (min)	= 2.83	Critical depth (in)	= 21
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 25.10
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 72.22
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 1 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 3 **Q = 25.20** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 50.0** **JLC = 1.00**

Inlet 2-2A / Downstream line = 2

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	19.80	24	22.12	23.12	3.14	8.02	0.00	3.30
Upstrm	21.50	22	23.30	24.41	2.98	8.46	1.20	1.90

Drainage area (ac)	= 0.00	Slope of invert (%)	= 3.400
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.583
Time of conc. (min)	= 2.55	Critical depth (in)	= 22
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 25.40
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 5.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 45.18
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 2 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 4 **Q = 20.20** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 372.0** **JLC = 1.00**

Inlet 2A-2B / Downstream line = 3

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	21.70	24	24.41	25.05	3.14	6.43	0.00	1.70
Upstrm	25.80	19	27.39	28.27	2.68	7.54	1.61	1.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.102
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.865
Time of conc. (min)	= 0.48	Critical depth (in)	= 19
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 25.72
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 3 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 5 **Q = 14.20** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 87.0** **JLC = 1.00**

Inlet 2B-2C / Downstream line = 4

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	26.00	24	28.27	28.59	3.14	4.52	0.00	1.00
Upstrm	27.00	16	28.36	28.97	2.28	6.23	1.86	1.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.149
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.430
Time of conc. (min)	= 0.00	Critical depth (in)	= 16
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 30.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 14.20
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 26.27
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 4 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 6 **Q = 81.40** **Size = 48 x 48 (Cir)** **Nv = 0.012** **Len = 108.4** **JLC = 1.00**

Inlet 1-3 / Downstream line = 1

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	16.40	48	20.88	21.53	12.56	6.48	0.00	3.60
Upstrm	18.00	32	20.69	21.96	8.97	9.07	3.76	5.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.476
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.400
Time of conc. (min)	= 5.86	Critical depth (in)	= 32
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 27.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 21.40
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 189.06
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 1 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 7 **Q = 60.00** **Size = 42 x 42 (Cir)** **Nv = 0.012** **Len = 422.0** **JLC = 1.00**

Inlet 3-4 / Downstream line = 6

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	18.60	40	21.96	22.58	9.50	6.32	3.43	4.90
Upstrm	21.00	28	23.37	24.53	6.94	8.65	3.27	4.50

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.569
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.462
Time of conc. (min)	= 3.52	Critical depth (in)	= 28
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 12.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 82.20
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 6 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 8 **Q = 12.00** **Size = 36 x 36 (Cir)** **Nv = 0.012** **Len = 32.8** **JLC = 1.00**

Inlet 4-MH 1 / Downstream line = 7

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	21.40	36	24.53	24.58	7.07	1.70	0.00	4.60
Upstrm	21.70	34	24.54	24.59	6.92	1.73	1.35	4.30

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.915
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.025
Time of conc. (min)	= 1.11	Critical depth (in)	= 13
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 0.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 69.10
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 7 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 9 **Q = 12.00** **Size = 24 x 24 (Cir)** **Nv = 0.013** **Len = 200.0** **JLC = 1.00**

MH 1-Inlet 4A / Downstream line = 8

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	22.00	24	24.59	24.81	3.14	3.82	0.00	5.00
Upstrm	24.00	15	25.23	25.77	2.02	5.94	1.95	5.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.481
Time of conc. (min)	= 0.00	Critical depth (in)	= 15
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 31.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 12.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 22.62
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 8 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 10 **Q = 36.00** **Size = 36 x 36 (Cir)** **Nv = 0.012** **Len = 32.8** **JLC = 1.00**

Inlet 4-MH 2 / Downstream line = 7

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	21.40	36	24.53	24.94	7.07	5.09	0.00	4.60
Upstrm	21.70	35	24.60	25.01	7.00	5.14	1.06	4.30

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.915
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.238
Time of conc. (min)	= 3.33	Critical depth (in)	= 23
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 29.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 0.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 69.10
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 7 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 11 **Q = 36.00** **Size = 30 x 30 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

MH2-Inlet 4B / Downstream line = 10

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	22.00	30	25.01	25.85	4.91	7.34	0.00	4.50
Upstrm	25.70	24	27.70	28.84	4.22	8.53	1.99	3.80

Drainage area (ac)	= 0.00	Slope of invert (%)	= 3.700
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.986
Time of conc. (min)	= 2.78	Critical depth (in)	= 24
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 32.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 85.46
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 10 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 12 **Q = 30.00** **Size = 30 x 30 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4B-4C / Downstream line = 11

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	26.00	30	28.84	29.42	4.91	6.11	0.00	3.50
Upstrm	27.00	26	29.17	29.85	4.53	6.62	1.68	3.50

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.439
Time of conc. (min)	= 2.22	Critical depth (in)	= 22
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 33.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 44.43
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 11 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 13 **Q = 24.00** **Size = 30 x 30 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4C-4D / Downstream line = 12

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	27.30	30	29.85	30.23	4.91	4.89	0.00	3.20
Upstrm	28.30	20	29.94	30.71	3.41	7.05	2.38	3.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.482
Time of conc. (min)	= 1.67	Critical depth (in)	= 20
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 34.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 44.43
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 12 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 14 **Q = 18.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4D-4E / Downstream line = 13

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	28.60	24	30.71	31.22	3.14	5.73	0.00	3.40
Upstrm	30.00	18	31.50	32.29	2.53	7.11	1.73	3.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.400
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 1.070
Time of conc. (min)	= 1.11	Critical depth (in)	= 18
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 35.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 28.99
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 13 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 15 **Q = 12.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4E-4F / Downstream line = 14

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	30.30	24	32.29	32.51	3.14	3.82	1.99	2.70
Upstrm	33.00	15	34.23	34.77	2.02	5.94	1.95	4.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 2.700
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.260
Time of conc. (min)	= 0.56	Critical depth (in)	= 15
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 39.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 40.26
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 14 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 16 **Q = 6.00** **Size = 18 x 18 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4F-4G / Downstream line = 15

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	33.30	18	34.77	34.95	1.76	3.41	1.49	4.20
Upstrm	34.30	11	35.23	35.65	1.16	5.18	1.45	4.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.697
Time of conc. (min)	= 0.00	Critical depth (in)	= 11
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 40.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 11.38
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 15 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Jefferson Commons II

PARCEL 3, DIGITAL PROPERTIES, ALBUQUERQUE, NM

Construction Plans for Private Infrastructure: Onsite Storm Sewer System

INDEX

SHEET TITLE	SHEET NO.
TITLE SHEET	1 OF 5
STORM DRAIN PLAN	2 OF 5
STORM DRAIN PROFILE - SOUTH	3 OF 5
STORM DRAIN PROFILES - NORTH & MIDDLE	4 OF 5
STORM DRAIN INLETS	5 OF 5

C.L.WEISS ENGINEERING, INC.
POST OFFICE BOX 97 SANDIA PARK, N.M. 87047 - (505) 281-1900
1100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 266-3444

City Project No .

Sheet 1 Of 5

JEFFERSON COMMONS II STORM DRAIN PLAN

STORM SEWER ALIGNMENT INTERSECTION PIPE CL'S

LINE	DIRECTION	DISTANCE
LINE 1	N53°35'48"E	63.36'
LINE 2	N31°48'50"W	315.26'
LINE 3	N44°07'38"E	50.00'
LINE 4	N44°07'38"E	372.00'
LINE 5	N44°07'38"E	87.00'
LINE 6	S36°24'12"E	108.40'
LINE 7	N44°07'38"E	421.95'
LINE 8	S89°07'38"W	32.80'
LINE 9	N45°52'41"W	200.00'
LINE 10	N89°07'38"E	32.80'
LINE 11	N44°07'38"E	100.00'
LINE 12	N44°07'38"E	100.00'
LINE 13	N44°07'38"E	100.00'
LINE 14	N44°07'38"E	100.00'
LINE 15	N44°07'38"E	100.00'
LINE 16	N44°07'38"E	100.00'

NORTH

0 25 50 100

1" = 40'

KEY

Lot 5 Lot 6 Lot 1 Lot 4 Lot 2 Lot 3

18+24.26 INLET 2C

17+37.26 INLET 2B

LINE 5 24" METAL

LINE 15 18" METAL

22+26.51 INLET 4G

21+26.51 INLET 4F

LINE 4 24" METAL

LINE 14 24" METAL

20+26.51 INLET 4E

MH-5G

13+65.26 INLET 2A

LINE 3 24" METAL

13+15.26 INLET 2

12+32.80 INLET 4A

LINE 9 24" METAL

LINE 13 30" METAL

19+26.51 INLET 4D

LINE 12 30" METAL

18+26.51 INLET 4C

17+26.51 INLET 4B

MH-5F

NORTH PROFILE
LINES 2,3,4 AND 5

MIDDLE PROFILE
LINES 8 AND 9

SOUTH PROFILE 15+93.71 = MIDDLE PROFILE 10+00

15+93.71 INLET 4

16+26.51 MH 2

10+32.80 MH 1

LINE 8 36" METAL

LINE 10 36" METAL

SOUTH PROFILE
LINES 1,6,7,10,11,12
13,14,15 AND 16

LINE 7 42" METAL

LINE 11 30" METAL

MH-5E

SOUTH PROFILE 10+63.36 = NORTH PROFILE 10+00

10+63.36 INLET 1

LINE 1 54" RCP

LINE 6 42" METAL

11+71.76 INLET 3

NEW STD C/G

NEW ARTERIAL PAVEMENT

S24°48'11"W 30.22'

L=1118.73'

R=1760.00'

CENTURY RIO 24 THEATRE

OFFICE BOULEVARD NE

N36°24'12"W

S36°24'12"E 118.85'

FRONTAGE ROAD

S32°52'43"W

456.32'

MH-5C

MH-5B

S44°07'38"W

8"SAS

10"W

Existing permanent easement as shown on the Plat of Parcel 3, Digital Properties filed 02/27/98, Volume 98C Folio 88

KEYED NOTES

45. WEST PROPERTY BOUNDARY IS PROJECT BASIS OF BEARINGS REFER TO PLAT
46. TEMPORARY BENCHMARK ELEVATION = 5124.44
47. LOCATION OF SOUTH STORM SEWER ALIGNMENT FROM INDICATED WEST PROPERTY CORNER
48. CONSTRUCT NEW DOWELLED COLLAR TO CONNECT FIRST JOINT OF 54" RCP STORM PIPE TO EXISTING CONCRETE HEADWALL AT STA 10+00 SEE STRUCTURAL DETAIL, SHEET S1
49. SEE STRUCTURAL DETAILS FOR DESIGN OF STORM SEWER INLET/JUNCTION BOXES, SHEET C1
50. CONSTRUCT 6' DIAMETER TYPE 'E' MANHOLE SEE COA STD DWGS 2102, 2110 AND 2118
51. CONSTRUCT TYPE 'D' SINGLE DROP INLET WITH NEENAH R4346 INLET FRAME AND GRATE SEE COA STD DWG 2206
52. CONSTRUCT TYPE 'D' DOUBLE DROP INLET WITH 2 NEENAH R4346 INLET FRAMES AND GRATES SEE COA STD DWG 2206
53. SEE OFFICE BLVD STREET PLANS, SHEET 3, FOR INFORMATION ON NEW CURB AND GUTTER, THIS AREA
54. SEE DRAINAGE/GRADING PLAN FOR FINAL GRADES THIS AREA
55. SEE WATER AND SANITARY SEWER PLANS, SHEETS 7 AND 8, FOR CONSTRUCTION INFORMATION THIS AREA
56. SEE OFFICE BLVD STREET PLANS, SHEET 3, FOR INFORMATION ON NEW INLET/STORM DRAIN, THIS AREA
57. SEE STORM DRAIN PROFILES, SHEETS 3 & 4, FOR VERTICAL INFORMATION ON NEW STORM SEWERS.
58. ALL STORM SEWER LINES SHALL BE CONTECH ULTRA FLOW STORM SEWER PIPE WITH GUAGES REFERENCED ON STRUCTURAL SHEETS (EXCEPT LINE 1)

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

AS-BUILT INFORMATION
BENCH MARKS
COA 125-18, AN NAVD BRASS CAP IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND LOCATED ON THE I-25 EAST FRONTAGE ROAD, 0.6 MILES NORTH OF ITS INTERSECTION WITH MONTGOMERY BOULEVARD NE. ELEVATION = 5,125.70.
CONTRACTOR'S AS-BUILTING BY DATE
SURVEYED BY DATE
FIELD VERIFICATION BY DATE
DRAWING CORRECTION BY DATE

MICRO-FILM INFORMATION
RECORDED BY DATE

ENGINEER'S SEAL

REVISIONS
NO. DATE BY REMARKS
DESIGNED BY SDC DATE
DRAWN BY SDC DATE
CHECKED BY CLW DATE

C.L. WEISS ENGINEERING, INC.
POST OFFICE BOX 87 SANDIA PARK, N.M. 87047 - (505) 281-1500
1100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 266-5444

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE:
STORM DRAIN PLAN

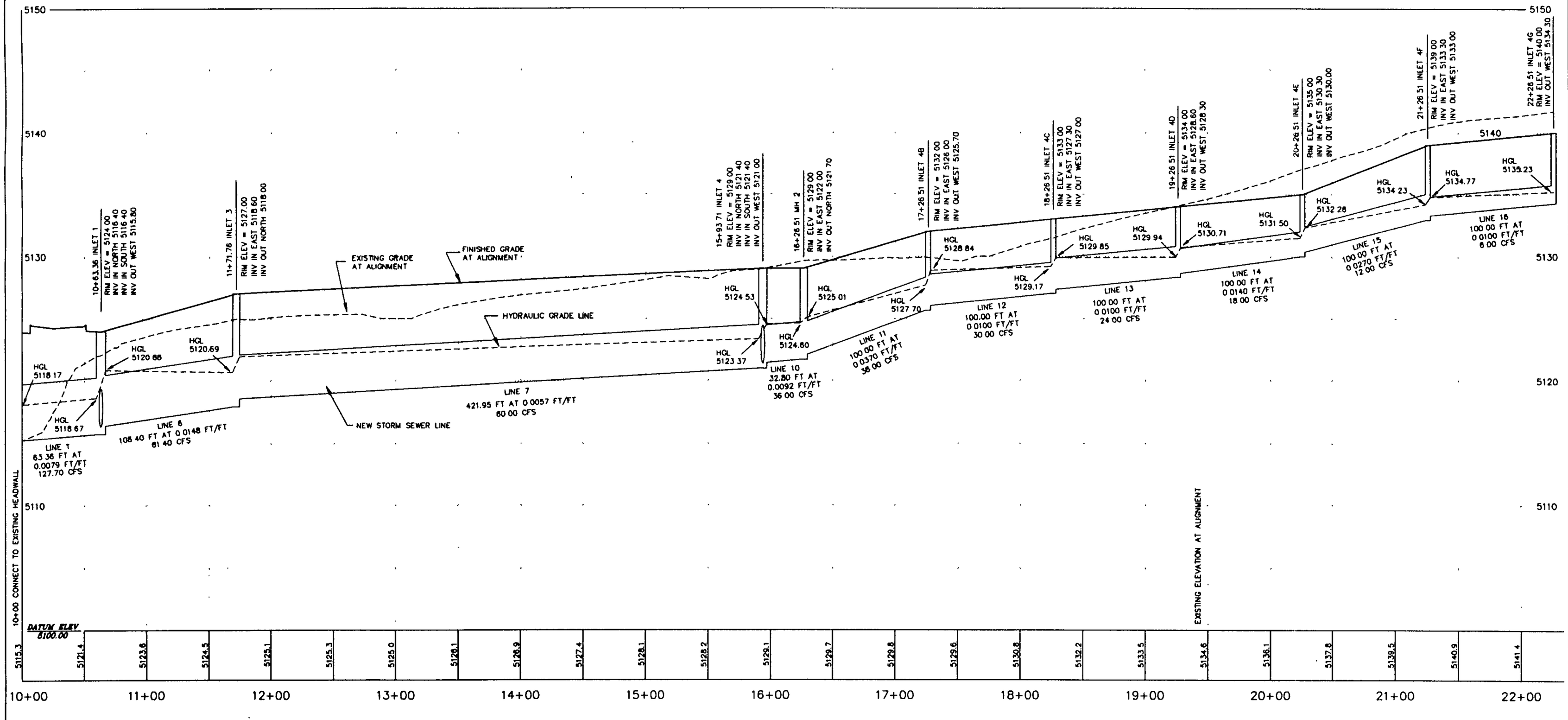
Design Review Committee | City Engineer Approval | Last Design Update: Month / Day / Year | Month / Day / Year

City Project No. | Zone Map No. | Sheet 2 Of 5

11/13/97 13:20:39

JEFFERSON COMMONS II STORM DRAIN PROFILE – SOUTH

1" = 40' HOR
1" = 4' VERT



ALIGNMENT STATIONING

C.L. WEISS ENGINEERING, INC.
POST OFFICE BOX 67 SANDIA PARK, N.M. 87047 - (505) 281-1900
100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 888-8444

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: STORM DRAIN PROFILE - SOUTH

Design Review Committee | City Engineer Approval | Last Design Update (month / day / year)

City Project No | Zone Map No | Sheet 3 Of 5

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

BENCH MARKS
CDA 125-18, AN NMSDH BRASS CAP IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND LOCATED ON THE I-25 EAST FRONTAGE ROAD, 0.6 MILES NORTH OF ITS INTERSECTION WITH MONTGOMERY BOULEVARD
NE ELEVATION = 5,125.70.

AS-BUILT INFORMATION
CONTRACTOR
WORK STARTED BY DATE
WORK ACCEPTED BY DATE
FIELD REVISION BY DATE
RECORDED BY DATE
CHECKED BY DATE

MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

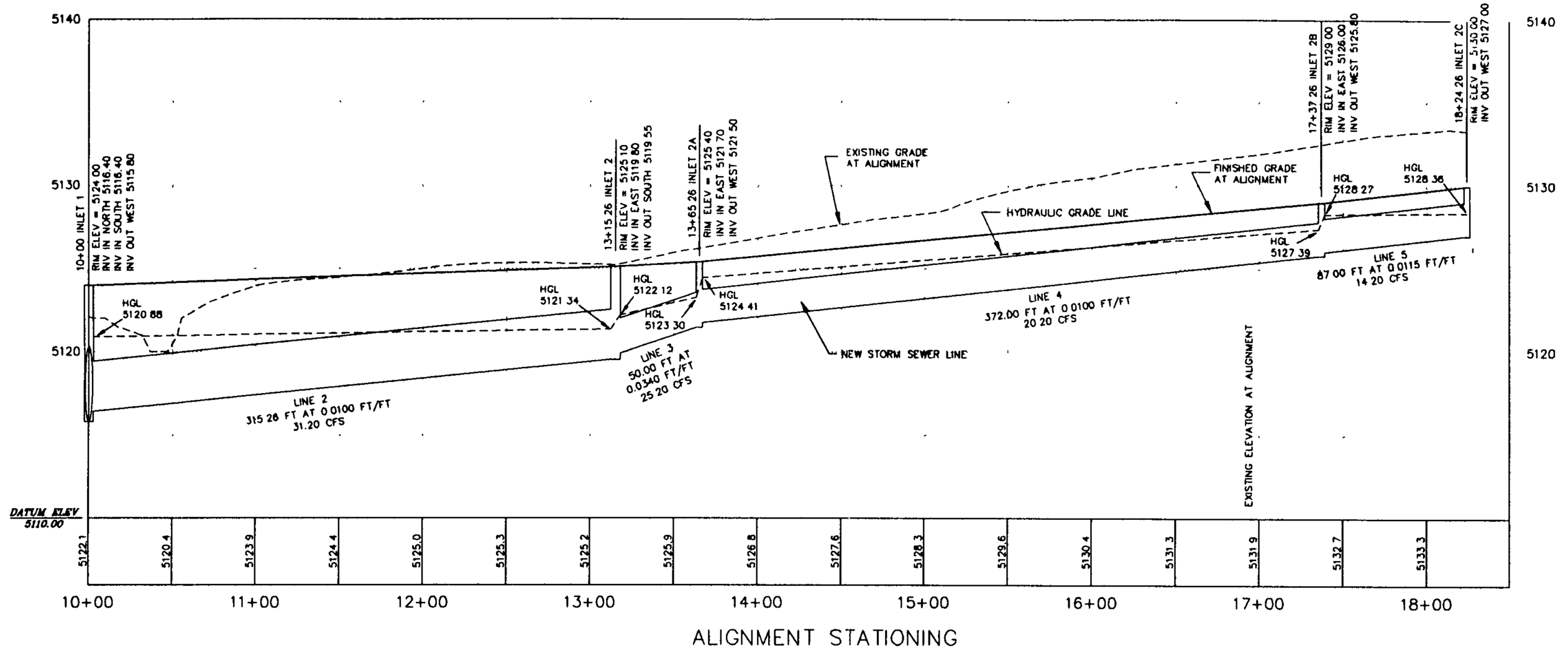
ENGINEER'S SEAL

REVISIONS
NO | DATE | BY | REMARKS

DESIGNED BY SDC DATE
DRAWN BY SDC DATE
CHECKED BY CLW DATE

11/3/97 13:22:51

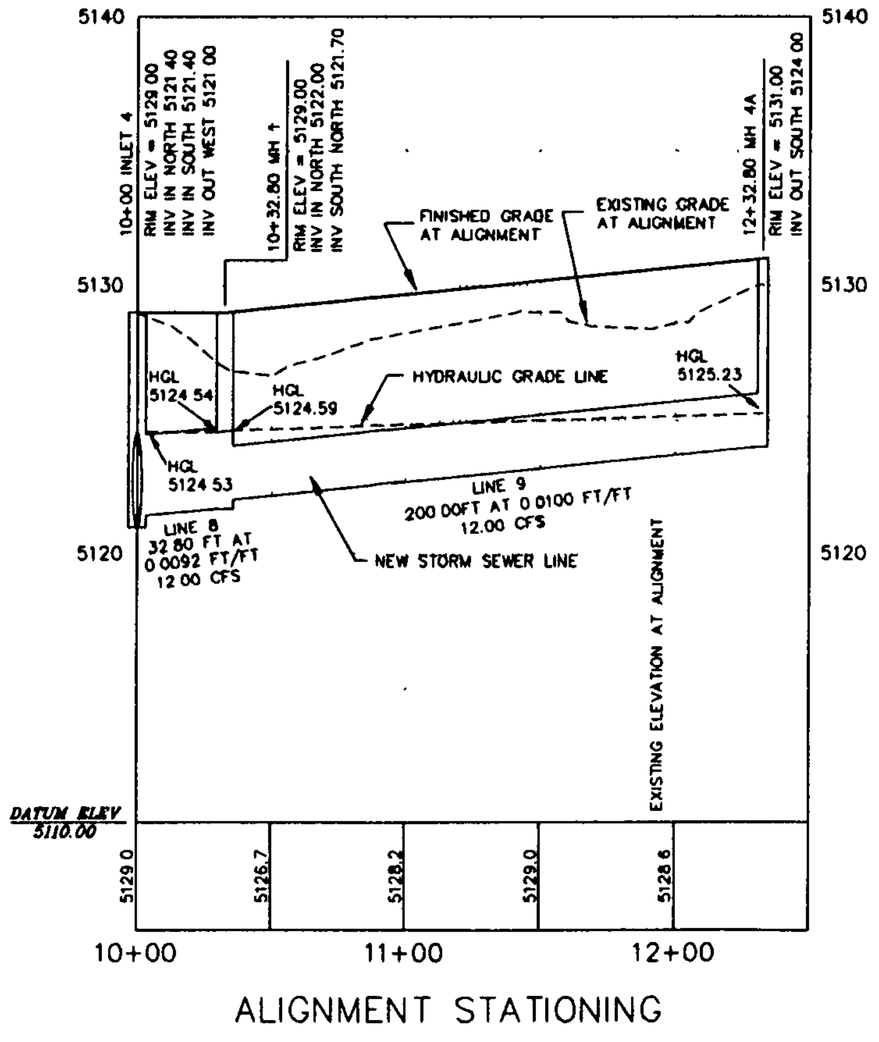
JEFFERSON COMMONS II STORM DRAIN PROFILE – NORTH



1'' = 40' HOR
1'' = 4' VERT

JEFFERSON COMMONS II STORM DRAIN PROFILE – MIDDLE

1'' = 40' HOR
1'' = 4' VERT



SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

BENCH MARKS
COA 125-18, AN NMSCH BRASS CAP IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND LOCATED ON THE I-25 EAST FRONTAGE ROAD, 0.6 MILES NORTH OF ITS INTERSECTION WITH MONTGOMERY BOULEVARD NE. ELEVATION = 5,125.70.

AS-BUILT INFORMATION
CONTRACTOR
WORK STARTED BY / DATE
WORK ACCEPTANCE BY / DATE
FIELD REVISIONS BY / DATE
RECORDED BY / DATE

MICRO-FILM INFORMATION
RECORDED BY / DATE
MB

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	DATE
		DESIGNED BY	SDC
		DRAWN BY	SDC
		CHECKED BY	CLW

C.L. WEISS ENGINEERING, INC.
POST OFFICE BOX 67 RANCHO PARK, N.M. 87047 - (505) 281-6100
1100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 268-8444

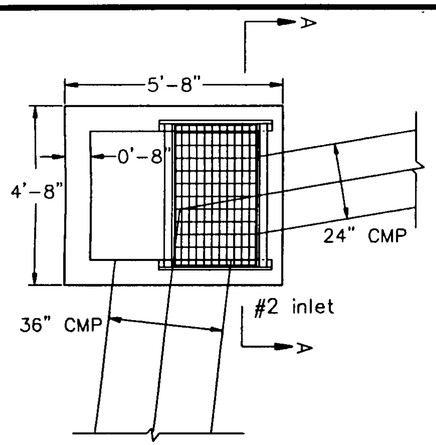
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

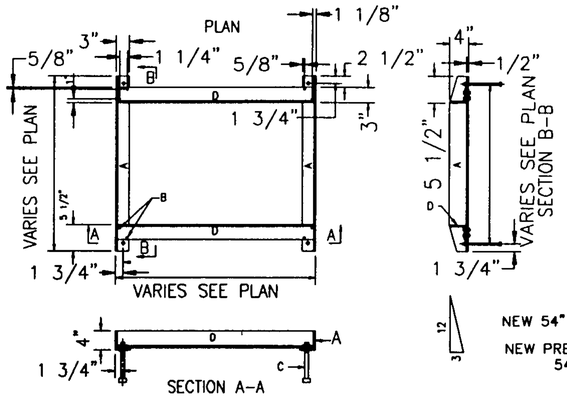
TITLE:
STORM DRAIN PROFILES - NORTH + MIDDLE

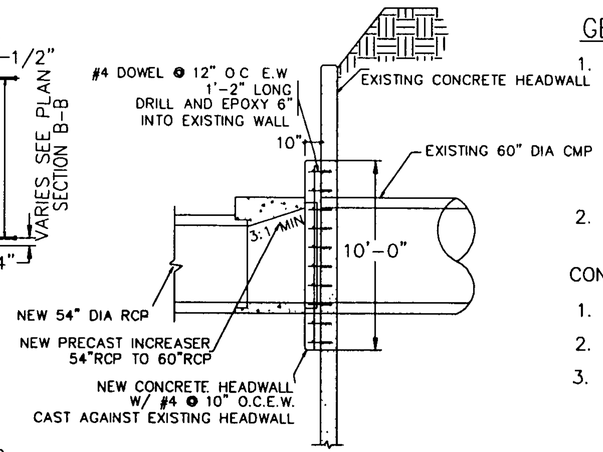
Design Review Committee	City Engineer Approval	Last Design Update	Month / Day / Year	Month / Day / Year

City Project No.
Zone Map No.
Sheet 4 Of 5

ss_pr_nm.dwg 11/13/97 13:21:36







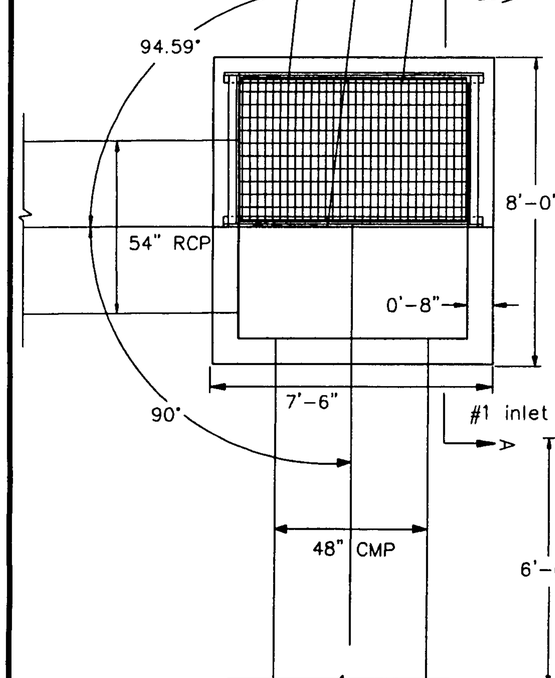
A/S1 54" RCP -60"CMP
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. Cast in Place Concrete.
   a. Compressive Strength of Cast in Place Concrete 3000 psi at 28 Days.
   b. Reinforcing Steel shall be ASTM A-615 Grade 60
   c. See CLSM Specification of sheet 2 of 2 for flowable fill specification.
2. Design Soil bearing pressure 2000 psf with footings and slab placed on compacted native soil

CONSTRUCTION CRITERIA

1. Lap all reinforcing bars 40 diameters unless noted otherwise.
2. Construction joint location shall be approved by the engineer.
3. Remove all vegetation, debris and other deleterious material from existing channel. Exposed soils at base shall be scarified to a depth of 12 inches and compacted to 95% of maximum density (ASTM D-1557) prior to placement of pipe.
4. The contractor is responsible for any temporary bracing required to hold structural elements in place until work is completed.
5. All conditions indicated on the plans shall be field verified by the contractor. If discrepancies exist they shall be brought to the attention of the architect and engineer before work proceeds.

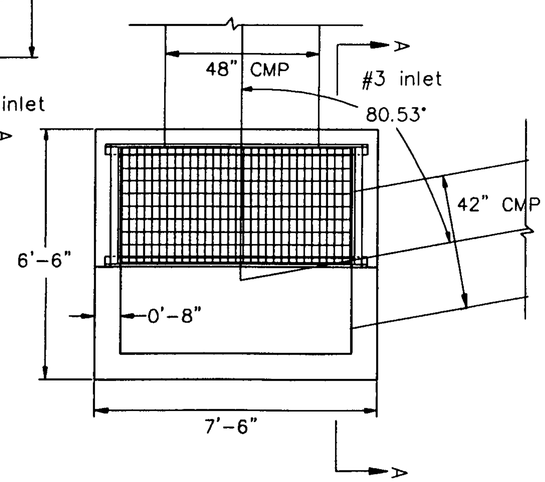


GENERAL NOTES:

1. ALL EXPOSED METAL PARTS SHALL BE PAINTED PRIOR TO ASSEMBLY. WELDING, MACHINING AND DRILLING SHALL BE DONE PRIOR TO PAINTING. ALL DIMENSIONS ARE FINISH DIMENSIONS.
2. ALL PARTS SHALL BE OF STRUCTURAL STEEL, GRADE 36.
3. FOR CLEANING AND PAINTING OF FRAME SEE DWG. 2215, GENERAL NOTE NO. 4.
4. FRAME MAY BE WELDED OR RIVETED.
5. GRATES TO BE McNICHOLS CO. HEAVY-WELD STEEEL (TYPE HWE 4" X 2 3/8") BEARING BAR 3" X 3/8"

CONSTRUCTION NOTES:

A. 4" X 3" X 1/2" X 3" 1/2" ∠
B. 2 - 3/8" RIVETS AT EACH CORNER, SEE GENERAL NOTE NO. 4.
C. 4 - 1/2" X 8" BOLTS WITH SQUARE HEAD & NUT AT EACH CORNER. FOR ANCHORING FRAME INTO CONCRETE WALL.
D. 3 - 1/2" X 3" X 3/8" X 3'-4 3/8" ∠

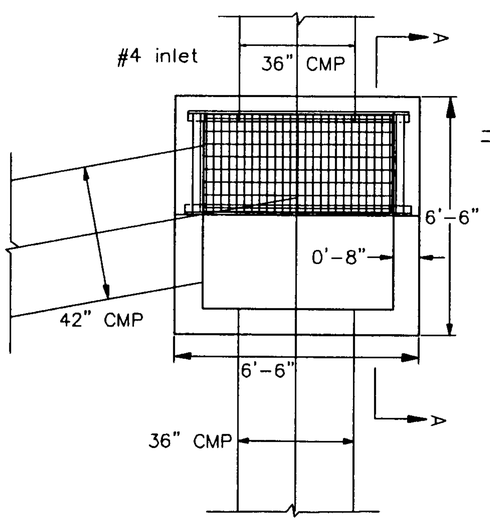


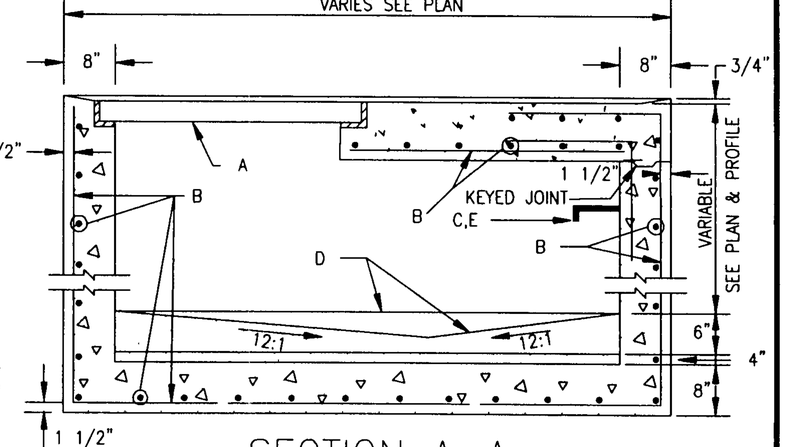
GENERAL NOTES:

1. OUTLET PIPE SIZE, PER DESIGN REQUIREMENT.

CONSTRUCTION NOTES:

A. FRAME & GRATE.
B. NO. 4 BARS AT 6" O.C. EACH WAY.
C. USE STANDARD STEPS, SEE DRW. 2229.
D CONC. FILL, SEE NOTE C DWG. 2201.
E. INSTALL STEPS ON UPSTREAM FACE.





SECTION A-A

STORM DRAIN INLETS 'INLETS 1, 2, 3, 4	S1

ENGINEERING ASSOCIATES, INC.
540 CHAMA NE, SUITE #11 ALBUQUERQUE, NM 87108

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 26, 2003

Chris Weiss, PE
C.L. Weiss Engineering, Inc.
PO Box 97
Sandia Park, NM 87047

Re: Jefferson Commons II – Lot 6 Bldgs B & C Rev. Grading & Drainage Plan
Engineer's Stamp dated 7-22-03, (F17/D63)

Dear Mr. Weiss,

Based on information contained in your submittal dated 7-29-03, the above referenced plan is approved as revised. This will be the plan that must be certified for release of Certificate of Occupancy.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Planning Dept.
Development and Building Services

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET
(REV. 11/01/2001)

F-17/D63

PROJECT TITLE: Jefferson Commons II – Lot 6 Buildings B and C
DRB #: _____ EPC #: _____
ZONE MAP / DRG. FILE #: F-17/D63
WORK ORDER #: _____

LEGAL DESCRIPTION: A portion of Parcel 6 - Digital Properties, Albuquerque, NM
CITY ADDRESS: _____

ENGINEERING FIRM: C.L. Weiss Engineering — CONTACT: Chris Weiss
ADDRESS: P.O. Box 97 — PHONE: 281-1800
CITY, STATE: Sandia Park, New Mexico — ZIP CODE: 87047

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

ARCHITECT: Berent Groth — CONTACT: Berent Groth
ADDRESS: 1100 Alvarado Dr. NE — PHONE: 266-6700
CITY, STATE: Albuquerque, New Mexico — ZIP CODE: 87110

SURVEYOR: Forstbauer Surveying Co. — CONTACT: Ron Forstbauer
ADDRESS: _____ — PHONE: 268-2112
CITY, STATE: Albuquerque, New Mexico — ZIP CODE: 87110

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

CHECK TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
__X__ DRAINAGE PLAN
_____ CONCEPTUAL GRADING & DRAINAGE PLAN
__X__ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERTIFICATION (HYDROLOGY)
_____ CLOMR / LOMR
_____ TRAFFIC CIRCULATION LAYOUT (TCL)
_____ ENGINEER'S CERTIFICATION (TCL)
_____ ENGINEER'S CERTIFICATION (DRB APPR, SITE PLAN)
_____ OTHER

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____ YES
__X__ NO
_____ COPY PROVIDED

RECEIVED
JUL 29 2003
HYDROLOGY SECTION

DATE SUBMITTED: Wednesday, July ~~25~~ 29, 2003 — BY: C.L. Weiss Engineering, Inc.

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

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

July 23, 2003

Hydrology Division
City of Albuquerque

RE: JEFFERSON COMMINS II – LOT 6 GRADING AND DRAINAGE PLAN (F17/D63[illegible])

To Whom It May Concern:

Enclosed with this letter is a revised copy of the above-mentioned project as well as a copy of your letter of approval dated May 1, 2001. Revisions incorporate architectural site plan revisions as follows:

1. Building / parking locations and layouts have been modified.

2. Underground Parking area added on south side to increase number of parking spaces available.

3. Proposed storm sewer has been modified as required. Overall drainage to master Storm Drain remains as originally calculated. Calculations specific to revised inlet locations are included with this submittal.

None of the revisions affect the overall drainage concept as previously approved. Grades have been adjusted as required to accommodate the new site plan features. The site is currently under construction.

Please don't hesitate to call me at 266-3444 or Chris Weiss at 281-1800 with any questions or comments.

Sincerely,

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

RECEIVED
JUL 29 2003
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 1, 2001

Chris Weiss, P.E.
C.L.Weiss Engineering
P.O. Box 987
Sandia Park, NM 87047

RE: JEFFERSON COMMONS II, LOT 6 - BUILDINGS B &C (F17-D63). Revised GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT AND ROUGH GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED APRIL 24, 2001

Dear Mr.Weiss:

Based on the information provided on your April 25, 2001 submittal, the above referenced project is approved for Rough Grading Permit and for Building Permit.

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

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

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

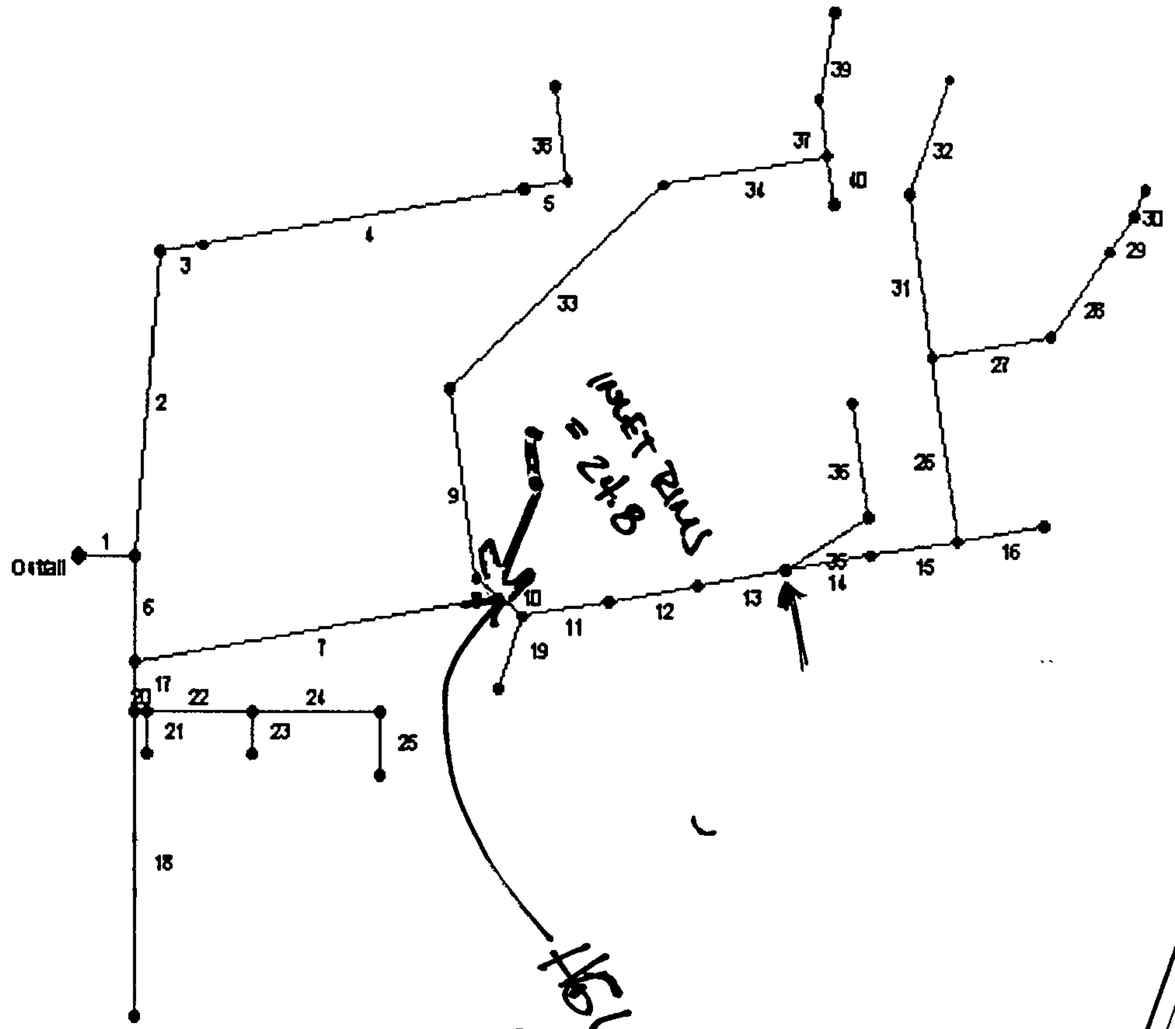
Sincerely,

John P. Murray, P.E.
Hydrology

c: Terri Martin
File

RECEIVED
JUL 29 2003
HYDROLOGY SECTION

Hydraflow Plan View



RECEIVED
JUL 29 2003
HYDROLOGY SECTION

Project file: JClot6.stm	No. Lines: 40	07-18-2003

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1	VA - Inlet 1	131.0	54 c	63.4	15.30	15.80	0.789	18.58	19.08	1.73	End
2	Inlet 1 - 2	30.70	36 c	315.3	16.40	19.55	0.999	20.81	21.32	0.78	1
3	Inlet 2 - 2A	24.70	24 c	50.0	19.80	21.50	3.400	22.10	23.26	0.17	2
4	Inlet 2A - 2B	19.70	24 c	372.0	21.70	25.80	1.102	23.42	27.37	0.13	3
5	Inlet 2B - 2B1	13.70	24 c	50.0	26.00	26.25	0.500	27.50	27.60	0.57	4
6	Inlet 1 - 3	85.15	48 c	108.4	16.40	17.25	0.784	20.81	21.09	0.73	1
7	Inlet 3 - 4	66.90	42 c	422.0	17.25	19.36	0.500	21.83*	23.42*	0.75	6
8	Inlet 4 - MH 1	11.50	36 c	32.8	19.80	21.70	5.793	24.17	24.16	0.04	7
9	MH 1 - Inlet 4A	11.50	24 c	200.0	22.00	24.00	1.000	24.20	25.20	0.45	8
10	Inlet 4 - MH 2	42.90	36 c	32.8	21.40	21.70	0.915	24.17	24.13	0.64	7
11	MH2 - Inlet 4B	42.10	30 c	100.0	22.00	25.70	3.700	24.78	27.88	0.20	10
12	Inlet 4B - 4C	36.10	30 c	100.0	26.00	27.00	1.000	28.08	29.01	0.17	11
13	Inlet 4C - 4D	30.10	30 c	100.0	27.30	28.30	1.000	29.18	30.13	0.43	12
14	Inlet 4D - 4E	22.00	24 c	100.0	28.60	30.00	1.400	30.56	31.66	0.15	13
15	Inlet 4E - 4F	19.00	24 c	100.0	30.30	31.30	1.000	31.81	32.84	0.83	14
16	Inlet 4F - 4G	3.00	18 c	100.0	31.60	32.60	1.000	33.67	33.72	0.07	15
17	Pappas SS1	10.75	24 c	52.0	19.00	19.52	1.000	21.83*	21.90*	0.18	6
18	Pappas SS2	8.70	24 c	315.0	19.52	22.20	0.851	22.08	23.24	0.43	17
19	10E Seafood	0.80	10 c	80.0	23.00	23.40	0.500	24.78*	24.84*	0.03	10
20	10 NRD	2.05	10 c	15.0	19.53	19.80	1.800	22.08*	22.16*	0.22	17
21	10W Cantina	0.60	10 c	45.0	19.80	20.00	0.444	22.38*	22.40*	0.02	20
22	10 NRD	1.45	10 c	118.0	19.80	22.20	2.034	22.38	22.74	0.24	20
23	10 E Cantina	0.65	10 c	45.0	22.20	22.40	0.444	22.97	22.98	0.04	22
24	10 NRD	0.80	10 c	148.0	22.20	25.20	2.027	22.97	25.60	0.15	22
25	10W Seafood	0.80	10 c	65.0	25.20	25.50	0.462	25.75	25.90	0.15	24
26	Fsb 1	13.00	18 c	192.0	31.60	33.60	1.042	33.67*	36.18*	0.84	15
27	Fsb1E	4.00	12 c	138.0	33.60	38.40	3.478	37.02	39.25	0.37	26
28	Fsb2E	2.30	10 c	111.0	38.40	39.50	0.991	39.62	40.33	0.04	27
29	Fsb3E	1.50	8 c	45.0	39.50	40.00	1.111	40.37*	40.78*	0.13	28
30	Fsb4E	1.50	8 c	30.0	40.00	40.30	1.000	40.91*	41.19*	0.29	29
31	Fsb1W	9.00	18 c	170.0	33.60	35.40	1.059	37.02*	38.09*	0.18	26
32	Fsb2W	5.40	12 c	127.0	35.40	38.00	2.047	38.27*	40.00*	0.73	31

Project File: JClot6.stm | Number of lines: 40 | Run Date: 07-18-2003

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

SUB-BASIN

Area of sub-basin flows = 60227 SF = 1.4 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.99 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 9968 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 6.2 cfs

TREATMENT	
A =	0%
B =	10%
C =	0%
D =	90%

ALBUQUERQUE GRATE CAPACITY CALCULATIONS

using orifice equation Q=CA * (2gh)^0.5

C	=	0.6
A	=	4.80
g	=	32.2
h	=	0.5
Q	=	16.34

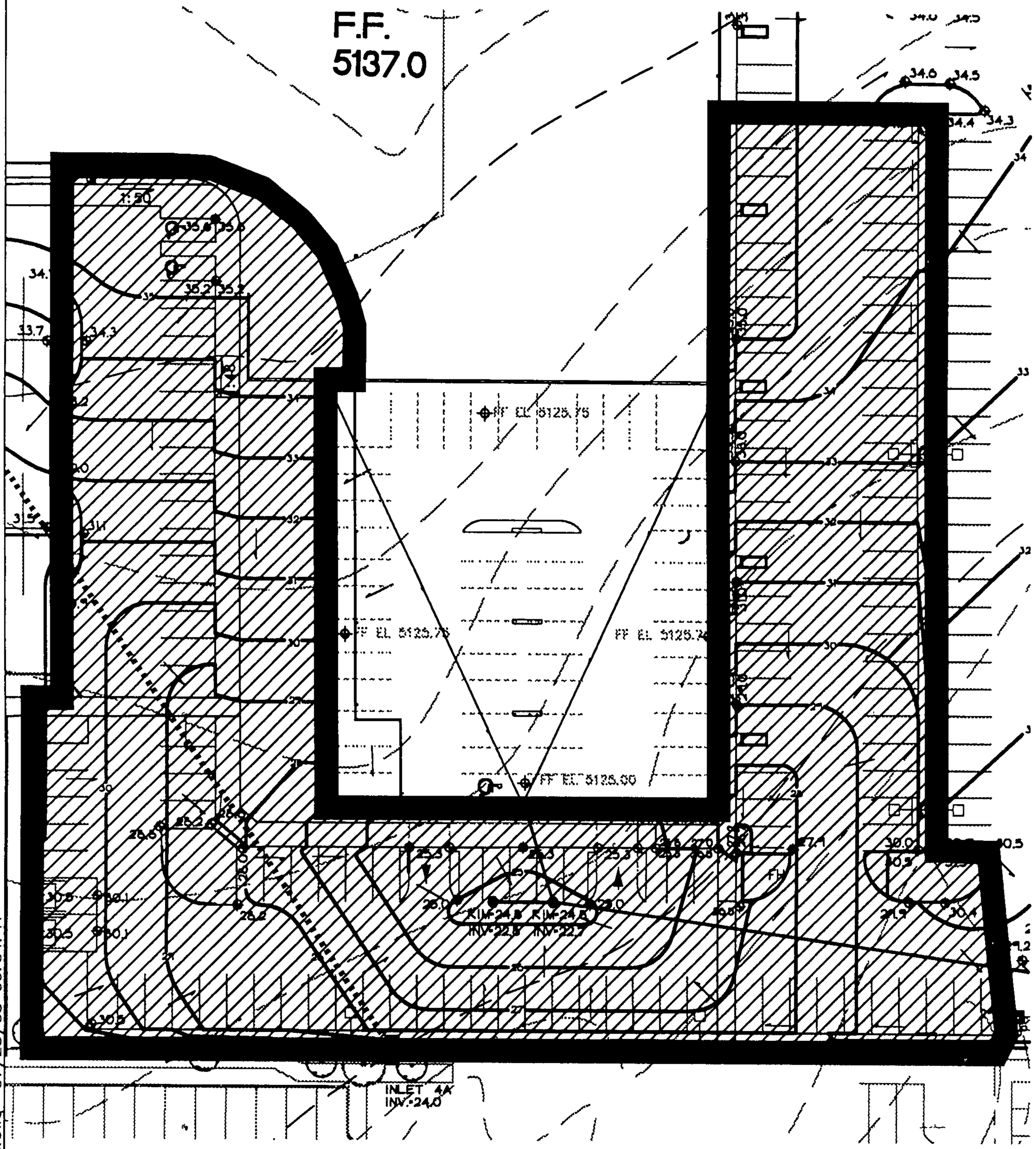
Note: Area (A) at left, is based on the open area of a single COA Albuquerque Grate. Based on calculations shown, a single inlet with a head of 0.5' will accept 16.34 cfs. If the inlet becomes 50% clogged, at an h = 0.5', the inlet will accept 8.2 cfs. To be used in paved areas.

Note: The above calculations references 0.5' head. The following chart refers to head values from 0.1' to 1.0' for additional info.

h = 0.1'	7.31 cfs	h = 0.6'	17.9 cfs
h = 0.2'	10.34 cfs	h = 0.7'	19.34 cfs
h = 0.3'	12.66 cfs	h = 0.8'	20.67 cfs
h = 0.4'	14.62 cfs	h = 0.9'	21.93 cfs
h = 0.5'	16.34 cfs	h = 1.0'	23.11 cfs

TWO INLETS WILL BE INSTALLED AS A SAFETY MEASURE IN THE EVENT THAT ONE INLET BECOMES CLOGGED. IN THE EVENT BOTH GRATES BECOME CLOGGED, FLOWS WILL BACK UP TO A DEPTH OF 0.7' AND SPILL OVER INTO THE UNDERGROUND PARKING AREA WHERE THEY WILL ENTER THE STORM DRAIN SYSTEM AT THE PROPOSED INTERNAL INLET.

C.L.WEISS ENGINEERING, INC.
POST OFFICE BOX 97 · SANDIA PARK, N.M. · 87047 - (505) 281-1800
1100 ALVARADO DR. NE · ALBUQUERQUE, N.M. · 87110 - (505) 256-3444



NEW DRAINAGE SUB-BASIN

N.T.S.

dq3 070803.dwg 07/23/03 09:04:41

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

April 15, 2005

Berent Groth, Registered Architect
Berent Groth Architect AIA
3546 Sequoia Place NW
Albuquerque, NM 87120

Re: Certification Submittal for Final Building Certificate of Occupancy for Jefferson Commons, Lot 6, Bldg C, [F-17 / D63]
5411 Jefferson NE
Architect's Stamp Dated 04/07/05

Dear Mr. Groth:

The TCL / Letter of Certification submitted on April 8, 2005 is not sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). You are missing an approved DRB Site Plan that needs to be part of your certification.

The TCL (or DRB Site Plan) submitted for Final C.O. needs to be the ***exact*** copy of the approved TCL (or DRB Site Plan) in the plan set approved for building permit. This will be the latest edition, which may have redlined comments, initialed and dated by the designer-of-record.

Resubmit acceptable package along with fully completed Drainage Information Sheet to front counter personnel for log in and evaluation by Transportation.

Sincerely,

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

c: Engineer
Hydrology file
CO Clerk

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

F-17/ D-63

BERENT GROTH ARCHITECT AIA

3546 SEQUOIA PLACE NW ALBUQUERQUE NEW MEXICO 87120
e-mail: bgrothaia@aol.com
phone: (505) 266 6700
fax: (505) 836 6461

Transportation Department
City of Albuquerque

Re: Final Certificate of Occupancy, Lot 6 Jefferson Commons, Bldg C, 5411 Jefferson NE
PERMIT NOS.: BP 020-5931 (Shell)
BP 0405981 (Office)
BP 0316244 (Garage)

April 7, 2005

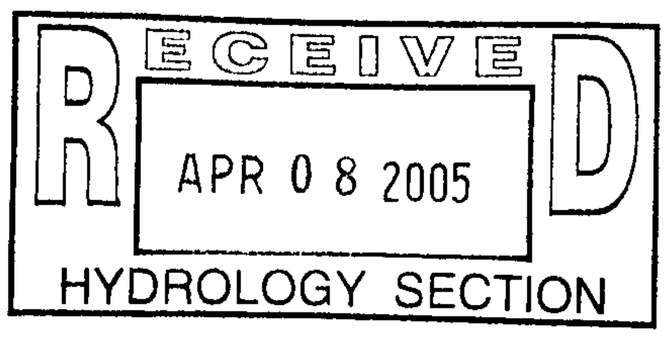
Dear Sirs,

On April 6, 2005 I inspected site improvements on Lot 6, Jefferson Commons, specifically 5411 Jefferson NE. I found these to be in subsantial compliance with approved plans under the above referenced Building Permit Numbers.

Very truly yours,

Berent Groth, Architect
NM Reg. No. 958

CC: Chant Associates



A Note From

Arlene

4/11/05 Nilo spoke w/ Groth B. early morning & will submit DTIS along w/ DRB approved Site Plan. (Received Cert 4/8/05). Also, spoke w/ him Tuesday 4/8/05

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: CHANT BLDG C ZONE MAP/DRG. FILE #: F-17-D63

DRB #: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: LOT 6, JEFFERSON COMMONS

CITY ADDRESS: 5411 JEFFERSON NE

ENGINEERING FIRM: CLW ENGINEERING CONTACT: BRIAN BOBRICK

ADDRESS: 1100 ALVARADO NE PHONE: 268 2828

CITY, STATE: ALB NM ZIP CODE: 87110

OWNER: CHANT ASSOC. CONTACT: ETHAN CHANT

ADDRESS: POB 3529, ALB. 87190 PHONE: 344 1633

CITY, STATE: _____ ZIP CODE: 87190

ARCHITECT: BERENT GROTH AIA CONTACT: BERENT GROTH

ADDRESS: 2546 SEQUOIA PL. NW PHONE: 266 6700

CITY, STATE: ALB. NM 87120 ZIP CODE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

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

CHECK TYPE OF APPROVAL SOUGHT

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

RECEIVED
APR 15 2005
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

____ YES
____ NO
____ COPY PROVIDED

DATE SUBMITTED: 4/15/05 BY: BERENT GROTH AIA

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

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

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 4, 2000

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

RE: JEFFERSON COMMONS II - LOT 6 (portion) - NMMCC OFFICES (F17-D63). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S STAMP DATED SEPTEMBER 6, 2000.

Dear Mr. Weiss:

Based on the information provided in your September 13, 2000 submittal, the above referenced project is approved for Certificate of Occupancy.

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

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET

PROJECT TITLE: :Jefferson Commons II - Lot 6 (a portion of) - NMMCC ZONE ATLAS / DRNG. FILE #: F-17 : D63

LEGAL DESCRIPTION: A portion of Parcel 3 - Digital Properties, Albuquerque, NM

CITY ADDRESS: N/A

ENGINEERING FIRM: C.L. Weiss Engineering CONTACT: Chris Weiss

ADDRESS: P.O. Box 97, Sandia Park NM, 87047 PHONE: 281-1800

OWNER: Chant and Associates CONTACT: Greg Chant

ADDRESS: 5501 Midway Park Pl. NE PHONE: 344-1633

ARCHITECT: Berent Groth CONTACT: Berent Groth

ADDRESS: 1100 Alvarado Dr. NE PHONE: 266-6700

SURVEYOR: Forstbauer Surveying Co. CONTACT: Ron Forstbauer

ADDRESS: 1100 Alvarado Dr. NE - 87110 PHONE: 268-2112

CONTRACTOR FIRM: N/A CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

_____ YES

_____ NO

_____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97366

EPC NO. 9720

PROJ. NO.

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT

_____ DRAINAGE PLAN

_____ CONCEPTUAL GRADING & DRAINAGE PLAN

_____ GRADING PLAN

_____ EROSION CONTROL PLAN

_X_ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

_____ SKETCH PLAT

_____ PRELIMINARY PLAT

_____ SITE DEVELOPMENT PLAN

_____ FINAL PLAT

_____ BUILDING PERMIT

_____ FOUNDATION PERMIT

_X_ CERT. OF OCCUPANCY

_____ ROUGH GRADING PERMIT

_____ GRADING / PAVING PERMIT

_____ OTHER

DATE SUBMITTED: September 13, 2000

BY: C.L. Weiss Engineering, Inc.

RECEIVED
SEP 13 2000
HYDROLOGY SECTION

Weiss Engineering

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

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

January 27, 1998

Ms. Lisa Ann Manwill
Engineering Associate / Hydrology
COA Hydrology
POBox 1293
Albuquerque, NM 87103

Re: Jefferson Commons II Storm Sewer

Dear Ms. Manwill:

This submittal is to provide documentation of the revision of Lines 15 & 16 for the SS system adjacent to Lots 1 & 6 for the Jefferson Commons II project. Lot 1 is planned for a hotel site, and their engineer, Jeff Motenson, requested that this section of the SS be lowered to accommodate the proposed grades of their site. The line sizes remain the same, with the slope of Line 15 changed from 2.7% to 1%, and the rims of Inlets 4F and 4G lowered.

Please call me at 281-1800 if you have any questions concerning this submittal. Thank you.

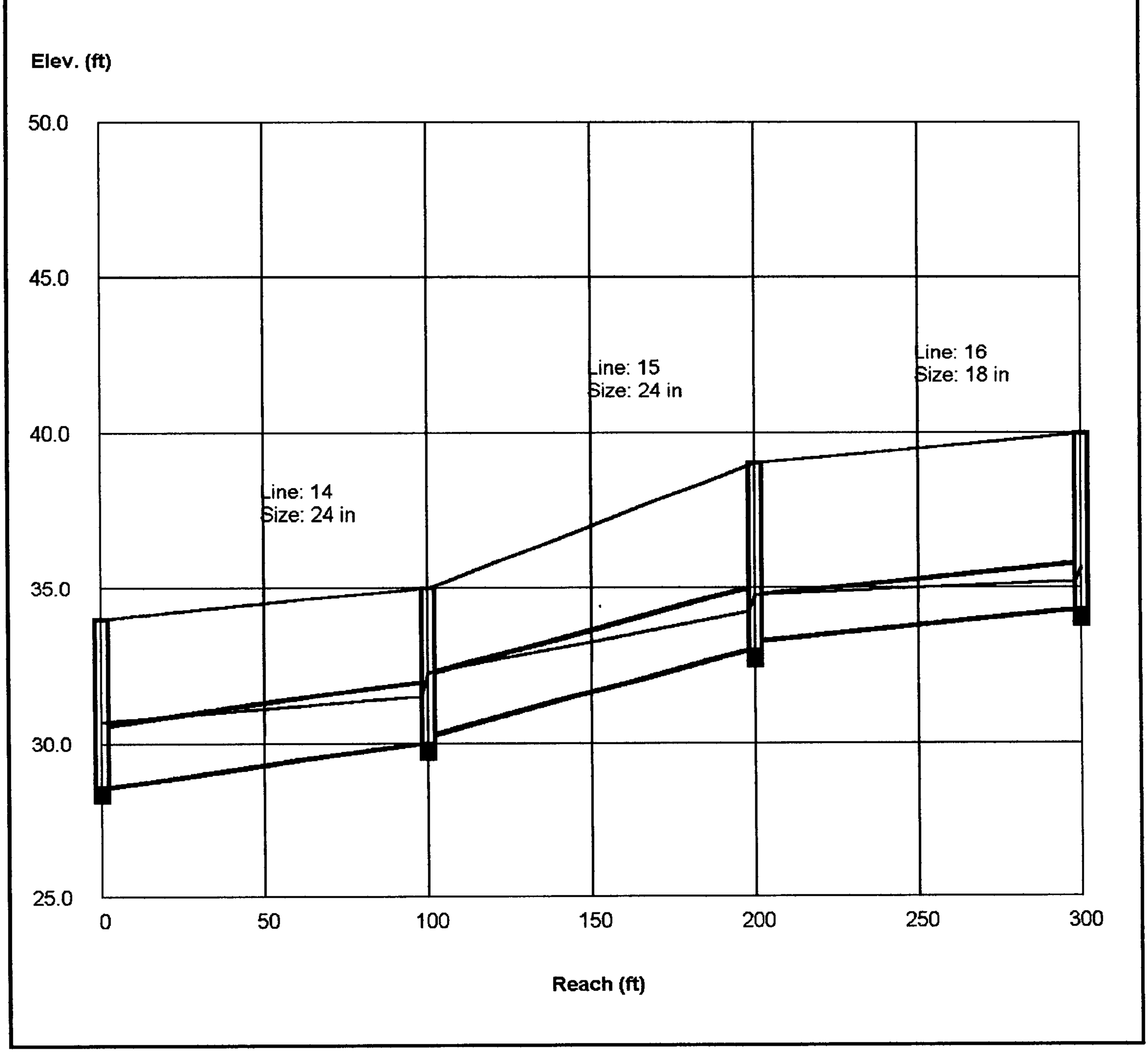
Sincerely,

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

Original Submittal

Storm Sewer Profile

Proj. file: JCCMP.STM



Original Submittal

Line 14 **Q = 18.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4D-4E / Downstream line = 13

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	28.60	24	30.71	31.22	3.14	5.73	0.00	3.40
Upstrm	30.00	18	31.50	32.29	2.53	7.11	1.73	3.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.400
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 1.070
Time of conc. (min)	= 1.11	Critical depth (in)	= 18
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 35.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 28.99
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 13 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 15 **Q = 12.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4E-4F / Downstream line = 14

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	30.30	24	32.29	32.51	3.14	3.82	1.99	2.70
Upstrm	33.00	15	34.23	34.77	2.02	5.94	1.95	4.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 2.700
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 2.260
Time of conc. (min)	= 0.56	Critical depth (in)	= 15
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 39.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 40.26
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 14 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Original Submittal

Line 16 Q = 6.00 Size = 18 x 18 (Cir) Nv = 0.012 Len = 100.0 JLC = 1.00

Inlet 4F-4G / Downstream line = 15

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	33.30	18	34.77	34.95	1.76	3.41	1.49	4.20
Upstrm	34.30	11	35.23	35.65	1.16	5.18	1.45	4.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.697
Time of conc. (min)	= 0.00	Critical depth (in)	= 11
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 40.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 11.38
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 15 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Original Submitted

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
14	Inlet 4D-4E	18.00	24 c	100.0	28.60	30.00	1.400	30.71	31.50	0.79	13
15	Inlet 4E-4F	12.00	24 c	100.0	30.30	33.00	2.700	32.29	34.23	0.55	14
16	Inlet 4F-4G	6.00	18 c	100.0	33.30	34.30	1.000	34.77	35.23	0.42	15

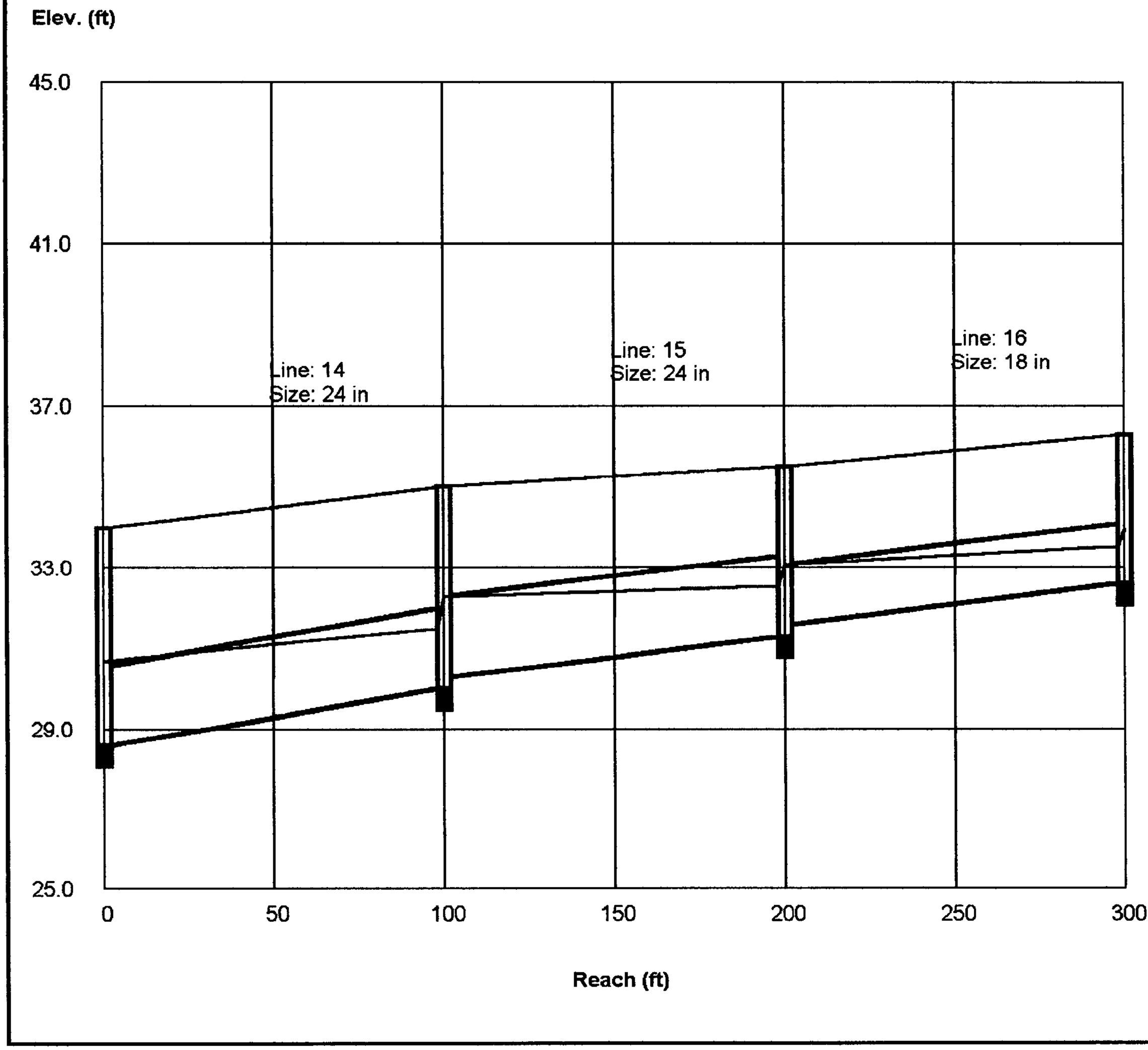
PROJECT FILE: JCCMP.STM | I-D-F FILE: JC.IDF | TOTAL NO. LINES: 16 | RUN DATE: 01-27-1998

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Revised Line 15, 16

Storm Sewer Profile

Proj. file: JCCMP.STM



Revised Line #15

Line 14 **Q = 18.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4D-4E / Downstream line = 13

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	28.60	24	30.71	31.22	3.14	5.73	0.00	3.40
Upstrm	30.00	18	31.50	32.29	2.53	7.11	1.73	3.00

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.400
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 1.070
Time of conc. (min)	= 1.11	Critical depth (in)	= 18
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 35.00
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 28.99
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 13 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Line 15 **Q = 12.00** **Size = 24 x 24 (Cir)** **Nv = 0.012** **Len = 100.0** **JLC = 1.00**

Inlet 4E-4F / Downstream line = 14

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	30.30	24	32.29	32.51	3.14	3.82	1.99	2.70
Upstrm	31.30	15	32.53	33.07	2.02	5.94	1.95	2.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.560
Time of conc. (min)	= 0.56	Critical depth (in)	= 15
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 35.50
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 24.50
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 14 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Revised Lue #16

Line 16 Q = 6.00 Size = 18 x 18 (Cir) Nv = 0.012 Len = 100.0 JLC = 1.00

Inlet 4F-4G / Downstream line = 15

	Invert	Depth	HGL	EGL	Area	Vel	T-Wid	Cover
Dnstrm	31.60	18	33.07	33.25	1.76	3.41	1.49	2.40
Upstrm	32.60	11	33.53	33.95	1.16	5.18	1.45	2.20

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.000
Runoff coefficient (C)	= 0.00	Slope energy grade line (%)	= 0.697
Time of conc. (min)	= 0.00	Critical depth (in)	= 11
Inlet Time (min)	= 0.00	Natural ground elev. (ft)	= 36.30
Intensity @ 100 yr (in/hr)	= 0.00	Upstream surcharge (ft)	= 0.00
Cumulative C x A	= 0.00	Additional Q (cfs)	= 6.00
Q = CA x I (cfs)	= 0.00	Full-flow capacity (cfs)	= 11.38
Q Catchment (cfs)	= 0.00	Inlet Type	= MH
Q Carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.00
Q Captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.00
Q Bypassed to 15 (cfs)	= 0.00	Width of Flow (ft)	= 0.00

Revised Jun 15 '16

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
14	Inlet 4D-4E	18.00	24 c	100.0	28.60	30.00	1.400	30.71	31.50	0.79	13
15	Inlet 4E-4F	12.00	24 c	100.0	30.30	31.30	1.000	32.29	32.53	0.55	14
16	Inlet 4F-4G	6.00	18 c	100.0	31.60	32.60	1.000	33.07	33.53	0.42	15

PROJECT FILE: JCCMP.STM	I-D-F FILE: JC.IDF	TOTAL NO. LINES: 16	RUN DATE: 01-27-1998

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

JEFFERSON COMMONS II STORM DRAIN PLAN

STORM SEWER ALIGNMENT INTERSECTION PIPE CL'S

LINE	DIRECTION	DISTANCE
LINE 1	N53°35'48"E	63.36'
LINE 2	N31°48'50"W	315.26'
LINE 3	N44°07'38"E	50.00'
LINE 4	N44°07'38"E	372.00'
LINE 5	N44°07'38"E	87.00'
LINE 6	S36°24'12"E	108.40'
LINE 7	N44°07'38"E	421.95'
LINE 8	S89°07'38"W	32.80'
LINE 9	N45°52'41"W	200.00'
LINE 10	N89°07'38"E	32.80'
LINE 11	N44°07'38"E	100.00'
LINE 12	N44°07'38"E	100.00'
LINE 13	N44°07'38"E	100.00'
LINE 14	N44°07'38"E	100.00'
LINE 15	N44°07'38"E	100.00'
LINE 16	N44°07'38"E	100.00'

NORTH

0 25 50 100

1" = 40'

KEY

Lot 1

Lot 2

Lot 3

Lot 4

Lot 5

Lot 6

(51) 18+24.26 INLET 2C — (62)

(51) 17+37.26 INLET 2B

LINE 5 24"METAL

(51) 13+65.26 INLET 2A

LINE 4 24"METAL

LINE 3 24"METAL

(49) 13+15.26 INLET 2

(57) NORTH PROFILE LINES 2,3,4 AND 5

(51) 12+32.80 INLET 4A — (52)

LINE 9 24"METAL

(57) MIDDLE PROFILE LINES 8 AND 9

SOUTH PROFILE 15+93.71 = MIDDLE PROFILE 10+00

(49) 15+93.71 INLET 4

(50) 16+26.51 MH 2

(50) 10+32.80 MH 1

LINE 8 36"METAL

LINE 10 36"METAL

LINE 11 30"METAL

(51) 17+26.51 INLET 4B

LINE 12 30"METAL

(51) 18+26.51 INLET 4C

LINE 13 30"METAL

(51) 19+26.51 INLET 4D

LINE 14 24"METAL

(51) 20+26.51 INLET 4E

LINE 15 24"METAL

(51) 21+26.51 INLET 4F

LINE 16 18"METAL

(51) 22+26.51 INLET 4G — (55)

MH-5F

MH-5G

(57) SOUTH PROFILE LINES 1,6,7,10,11,12 13,14,15 AND 16

LINE 7 42"METAL

LINE 2 36"METAL

SOUTH PROFILE 10+63.36 = NORTH PROFILE 10+00

(49) 10+63.36 INLET 1

(49) 11+71.76 INLET 3

MH-5E

MH-5C

MH-5B

NEW STD C/G

NEW ARTERIAL PAVEMENT

S24°48'11"W 30.22'

LINE 1 54"METAL

LINE 6 48"METAL

CENTURY RIO 24 THEATRE

OFFICE BOULEVARD NE

N35°24'12"W

FRONTAGE ROAD (SOUTHBOUND) FRONT-OF-BAY LANES ASPHALT PAVING

S35°24'12"E

S44°07'38"W

436.32'

R=1760.00'

L=1118.73'

Existing permanent easement as shown on the Plat of Parcel 3, Digital Properties filed 02/27/98, Volume 98C Folio 88

Existing permanent easement as shown on the Plat of Parcel 3, Digital Properties filed 02/27/98, Volume 98C Folio 88

KEYED NOTES

(45) WEST PROPERTY BOUNDARY IS PROJECT BASIS OF BEARINGS REFER TO PLAT

(46) TEMPORARY BENCHMARK ELEVATION = 5124.44

(47) LOCATION OF SOUTH STORM SEWER ALIGNMENT FROM INDICATED WEST PROPERTY CORNER

(48) CONSTRUCT NEW DOWELLED COLLAR TO CONNECT FIRST JOINT OF 54" ~~WIDTH~~ RCP STORM PIPE TO EXISTING CONCRETE HEADWALL AT STA 10+00 SEE STRUCTURAL DETAIL, SHEET S1

(49) SEE STRUCTURAL DETAILS FOR DESIGN OF STORM SEWER INLET/JUNCTION BOXES, SHEET C1.

(50) CONSTRUCT 6' DIAMETER TYPE 'E' MANHOLE SEE COA STD DWGS 2102, 2110 AND 2118.

(51) CONSTRUCT TYPE 'D' SINGLE DROP INLET WITH NEENAH R4346 INLET FRAME AND GRATE SEE COA STD DWG 2206

(52) CONSTRUCT TYPE 'D' DOUBLE DROP INLET WITH 2 NEENAH R4346 INLET FRAMES AND GRATES. SEE COA STD DWG 2206

(53) SEE OFFICE BLVD. STREET PLANS, SHEET 3, FOR INFORMATION ON NEW CURB AND GUTTER, THIS AREA

(54) SEE DRAINAGE/GRADING PLAN FOR FINAL GRADES THIS AREA.

(55) SEE WATER AND SANITARY SEWER PLANS, SHEETS 7 AND 8, FOR CONSTRUCTION INFORMATION THIS AREA

(56) SEE OFFICE BLVD. STREET PLANS, SHEET 3, FOR INFORMATION ON NEW INLET/STORM DRAIN, THIS AREA

(57) SEE STORM DRAIN PROFILES, SHEETS 3 & 4, FOR VERTICAL INFORMATION ON NEW STORM SEWERS.

(58) ALL STORM SEWER LINES SHALL BE CONTECH ULTRA FLOW STORM SEWER PIPE WITH GUAGES REFERENCED ON STRUCTURAL SHEETS. (EXCEPT LINE 1)

SURVEY INFORMATION
FIELD NOTES BY DATE
NO.

AS-BUILT INFORMATION
CONTRACTOR
BENCH MARKS
COA 125-18, AN NMSCH BRASS CAP IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND LOCATED ON THE I-25 EAST FRONTAGE ROAD, 0.6 MILES NORTH OF ITS INTERSECTION WITH MONTGOMERY BOULEVARD
NE. ELEVATION = 5,125.70
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

ENGINEER'S SEAL

REVISIONS
NO DATE REMARKS BY
DESIGNED BY SDC DATE
DRAWN BY SDC DATE
CHECKED BY CLW DATE

C.L. WEISS ENGINEERING, INC.
POST OFFICE BOX 67 RANCHOS PARK, N.M. 87047 - (505) 281-1800
1200 ALVARADO DR NE ALBUQUERQUE, N.M. 87110 - (505) 888-9444

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: STORM DRAIN PLAN

Design Review Committee	City Engineer Approval	Last Design Update	Month / Day / Year	Month / Day / Year

City Project No. .

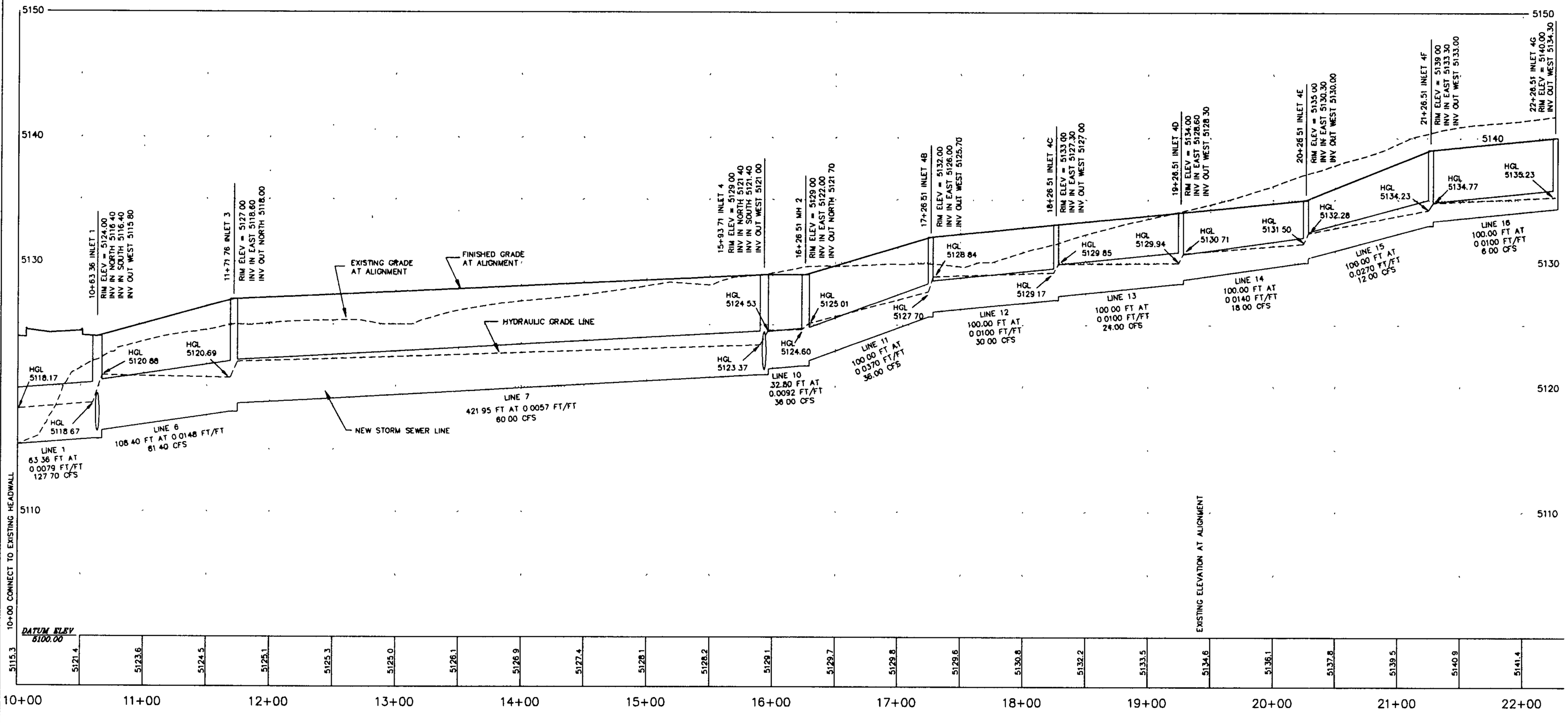
Zone Map No. .

Sheet 2 Of 5

al_plan.dwg 11/13/97 13:19:11

JEFFERSON COMMONS II STORM DRAIN PROFILE – SOUTH

1" = 40' HOR
1" = 4' VERT



ALIGNMENT STATIONING

AS-BUILT INFORMATION

CONTRACTOR
WORK STAKED BY — DATE
FIELD ACCEPTANCE BY — DATE
FIELD REVISION BY — DATE
DRAWING CORRECTION BY — DATE

MICRO-FILM INFORMATION
RECORDED BY — DATE
HG

BENCH MARKS
CDA 125-15, AN INVSCH BRASS CAP IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND LOCATED ON THE I-25 EAST FRONTAGE ROAD, 0.6 MILES NORTH OF ITS INTERSECTION WITH MONTGOMERY BOULEVARD
NE ELEVATION = 5,125.70.

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

REVISIONS
DESIGN — DATE
DESIGNED BY SDC — DATE
DRAWN BY SDC — DATE
CHECKED BY CLW — DATE

C.L. WEISS ENGINEERING, INC.
POST OFFICE BOX 67 SANDIA PARK, N.M. 87047 - (505) 281-1900
1100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 888-0444

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

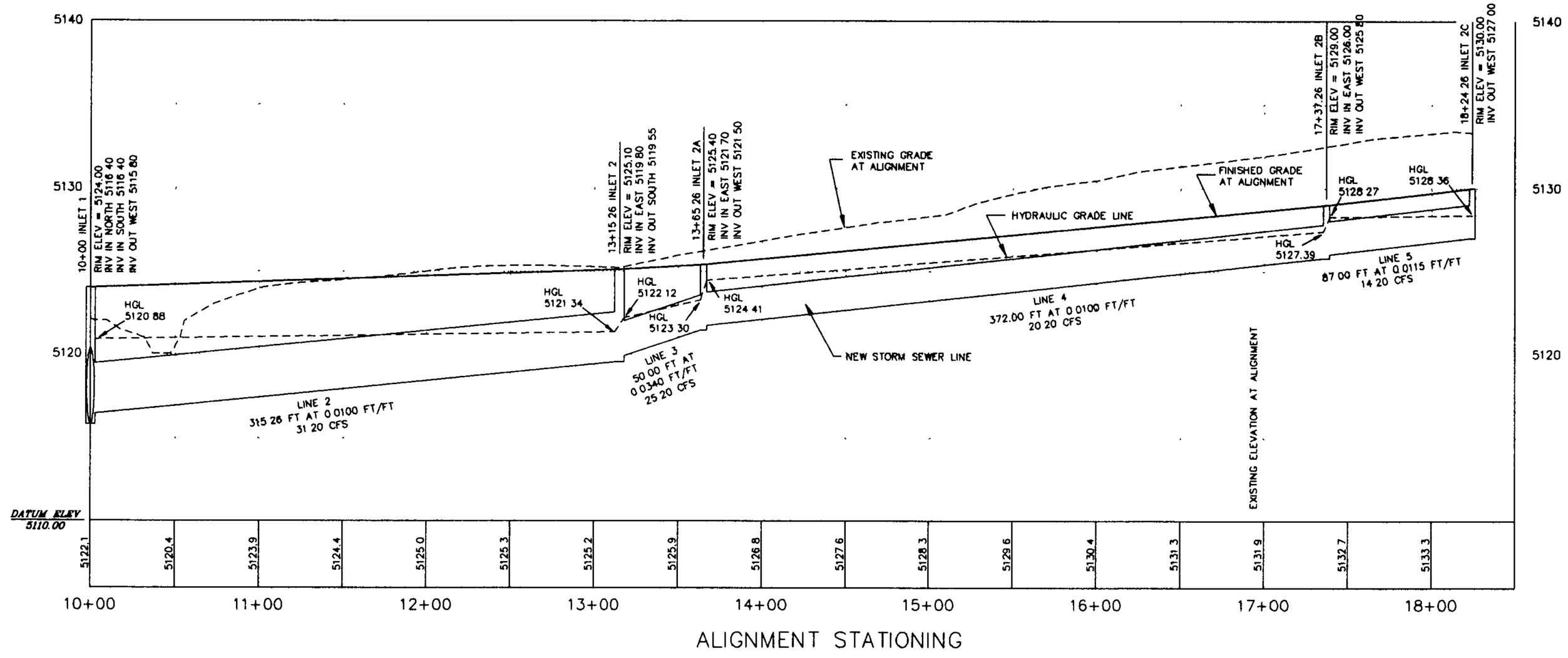
TITLE:
STORM DRAIN PROFILE - SOUTH

Design Review Committee	City Engineer Approval	Last Design Update	Month / Day / Year	Month / Day / Year

City Project No: .
Zone Map No.: .
Sheet 3 Of 5

11/13/97 13:22:02

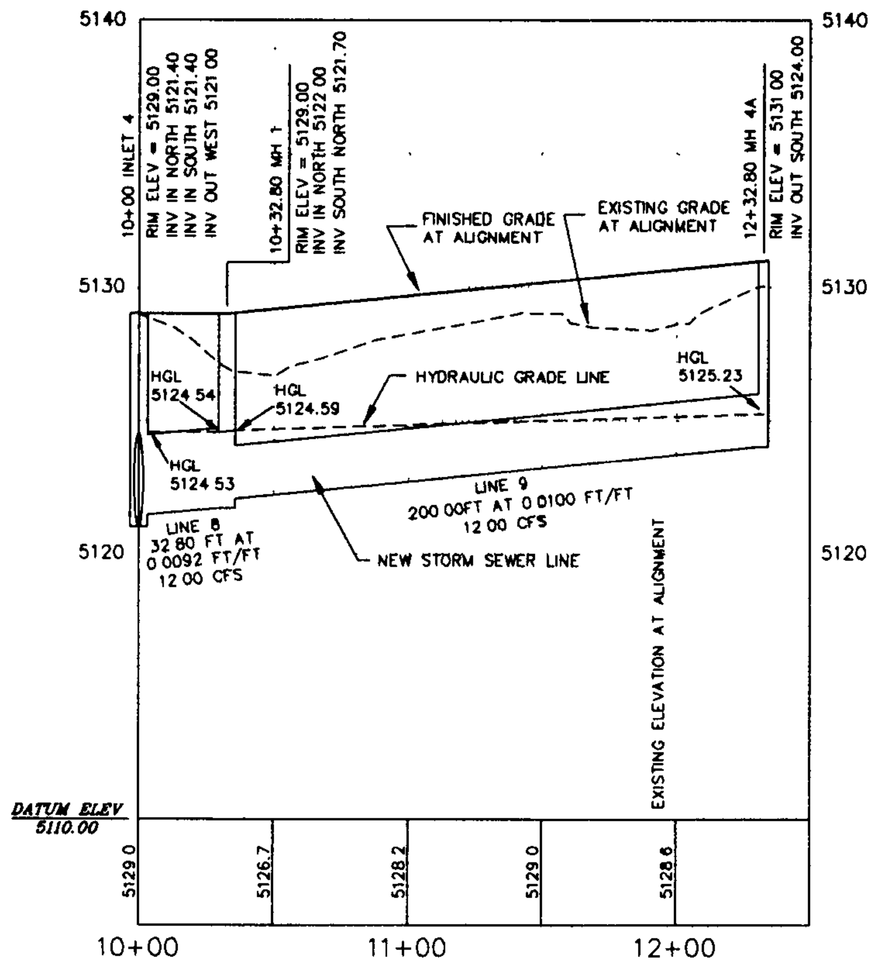
JEFFERSON COMMONS II STORM DRAIN PROFILE – NORTH



ALIGNMENT STATIONING

1'' = 40' HOR
1'' = 4' VERT

JEFFERSON COMMONS II STORM DRAIN PROFILE – MIDDLE



ALIGNMENT STATIONING

1'' = 40' HOR
1'' = 4' VERT

C.L.WEISS ENGINEERING, INC.
POST OFFICE BOX 97 SANDIA PARK, N.M. 87047 - (505) 281-1800
1100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 268-8444

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE:
STORM DRAIN PROFILES - NORTH + MIDDLE

Design Review Committee	City Engineer Approval	Last Design Update	Month / Day / Year	Month / Day / Year

City Project No: .
Zone Map No: .
Sheet 4 Of 5

SURVEY INFORMATION
FIELD NOTES

NO	BY	DATE

BENCH MARKS
CDA 125-18, AN NMSCH BRASS CAP IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND LOCATED ON THE I-25 EAST FRONTAGE ROAD, 0.6 MILES NORTH OF ITS INTERSECTION WITH MONTGOMERY BOULEVARD NE ELEVATION = 5,125.70

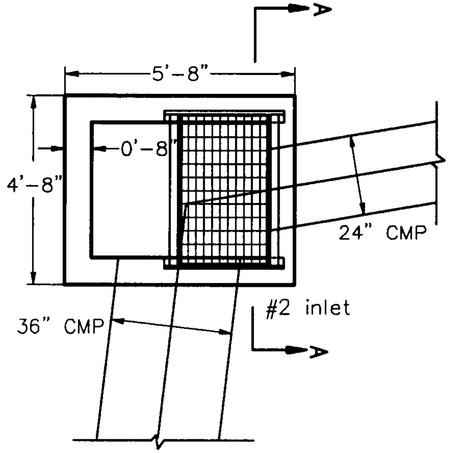
AS-BUILT INFORMATION
CONTRACTOR
WORK STAKED BY: DATE
ACCEPTANCE BY: DATE
FIELD INSPECTION BY: DATE
DRAWINGS CORRECTED BY: DATE

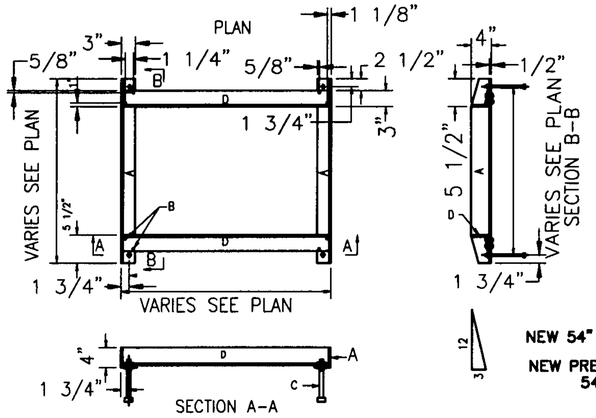
MICRO-FILM INFORMATION
RECORDED BY: DATE
REQ.

ENGINEER'S SEAL

NO	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	DATE
		DESIGNED BY SDC	DATE
		DRAWN BY SDC	DATE
		CHECKED BY CLW	DATE

js_gr_jcm.dwg 11/13/97 13:21:36



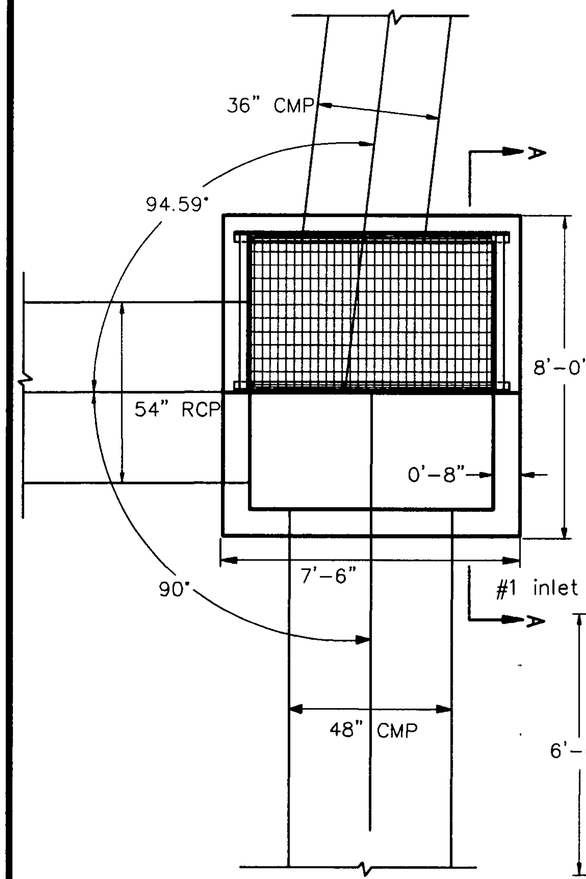


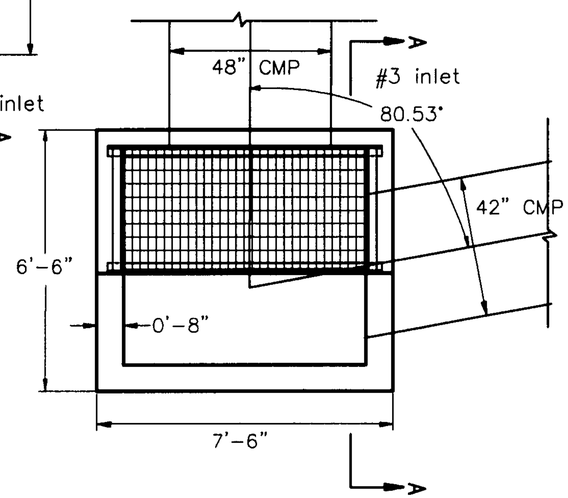
GENERAL NOTES:

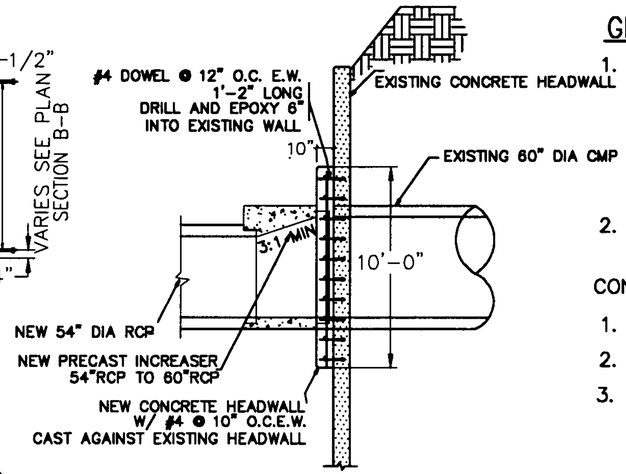
1. ALL EXPOSED METAL PARTS SHALL BE PAINTED PRIOR TO ASSEMBLY. WELDING, MACHINING AND DRILLING SHALL BE DONE PRIOR TO PAINTING. ALL DIMENSIONS ARE FINISH DIMENSIONS.
2. ALL PARTS SHALL BE OF STRUCTURAL STEEL, GRADE 36.
3. FOR CLEANING AND PAINTING OF FRAME SEE DWG. 2215, GENERAL NOTE NO. 4.
4. FRAME MAY BE WELDED OR RIVETED.
5. GRATES TO BE McNICHOLS CO. HEAVY-WELD STEEEL (TYPE HWE 4" X 2 3/8") BEARING BAR 3" X 3/8"

CONSTRUCTION NOTES:

A. 4" X 3" X 1/2" X 3" 1/2" ∠
B. 2 - 3/8" RIVETS AT EACH CORNER, SEE GENERAL NOTE NO. 4.
C. 4 - 1/2" X 8" BOLTS WITH SQUARE HEAD & NUT AT EACH CORNER. FOR ANCHORING FRAME INTO CONCRETE WALL.
D. 3 - 1/2" X 3" X 3/8" X 3'-4 3/8" ∠







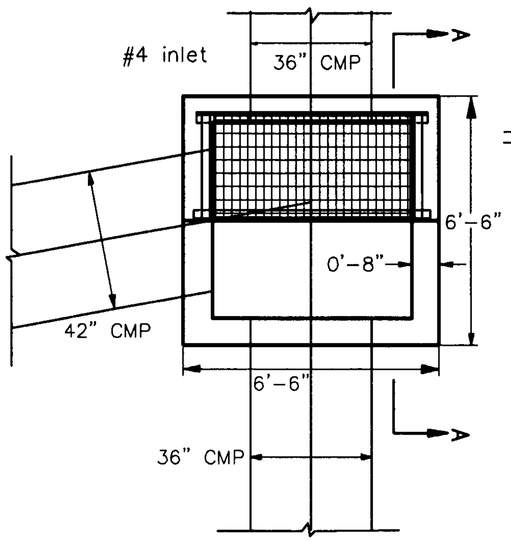
A / S1 — 54" RCP - 60"CMP
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. OUTLET PIPE SIZE, PER DESIGN REQUIREMENT.

CONSTRUCTION NOTES:

A. FRAME & GRATE.
B. NO. 4 BARS AT 6" O.C. EACH WAY.
C. USE STANDARD STEPS, SEE DRW. 2229.
D. CONC. FILL, SEE NOTE C DWG. 2201.
E. INSTALL STEPS ON UPSTREAM FACE.

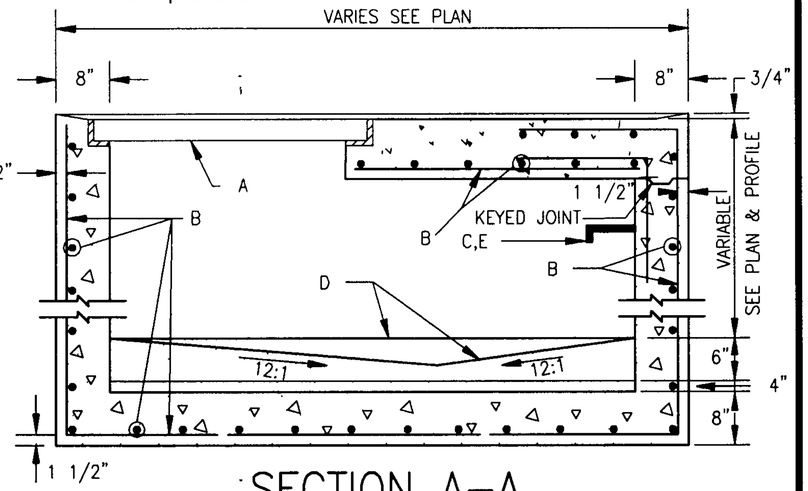


GENERAL NOTES:

1. Cast in Place Concrete.
   a. Compressive Strength of Cast in Place Concrete 3000 psi at 28 Days.
   b. Reinforcing Steel shall be ASTM A-615 Grade 60
   c. See CLSM Specification of sheet 2 of 2 for flowable fill specification.
2. Design Soil bearing pressure 2000 psf with footings and slab placed on compacted native soil.

CONSTRUCTION CRITERIA

1. Lap all reinforcing bars 40 diameters unless noted otherwise.
2. Construction joint location shall be approved by the engineer.
3. Remove all vegetation, debris and other deleterious material from existing channel. Exposed soils at base shall be scarified to a depth of 12 inches and compacted to 95% of maximum density (ASTM D-1557) prior to placement of pipe.
4. The contractor is responsible for any temporary bracing required to hold structural elements in place until work is completed.
5. All conditions indicated on the plans shall be field verified by the contractor. If discrepancies exist they shall be brought to the attention of the architect and engineer before work proceeds.



SECTION A-A

STORM DRAIN INLETS INLETS 1, 2, 3, 4	S1

ENGINEERING ASSOCIATES, INC.
540 CHAMA NE, SUITE #11 ALBUQUERQUE, NM 87108

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 1, 2001

Chris Weiss, P.E.
C.L.Weiss Engineering
P.O. Box 987
Sandia Park, NM 87047

RE: JEFFERSON COMMONS II, LOT 6 - BUILDINGS B &C (F17-D63). Revised GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT AND ROUGH GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED APRIL 24, 2001

Dear Mr.Weiss:

Based on the information provided on your April 25, 2001 submittal, the above referenced project is approved for Rough Grading Permit and for Building Permit.

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

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

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

Sincerely,

John P. Murray, P.E.
Hydrology

c: Terri Martin
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: :Jefferson Commons II – Lot 6 Buildings B and C ZONE ATLAS / DRNG. FILE #: F-17/D63

LEGAL DESCRIPTION: A portion of Parcel 6 - Digital Properties, Albuquerque, NM

CITY ADDRESS: N/A

ENGINEERING FIRM: C.L. Weiss Engineering CONTACT: Chris Weiss

ADDRESS: P.O. Box 97, Sandia Park NM, 87047 PHONE: 281-1800

OWNER: Chant and Associates CONTACT: Greg Chant

ADDRESS: 5501 Midway Park Pl. NE PHONE: 344-1633

ARCHITECT: Berent Groth CONTACT: Berent Groth

ADDRESS: 1100 Alvarado Dr. NE PHONE: 266-6700

SURVEYOR: Forstbauer Surveying Co. CONTACT: Ron Forstbauer

ADDRESS: 1100 Alvarado Dr. NE - 87110 PHONE: 268-2112

CONTRACTOR FIRM: N/A CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

_____YES

_____NO

_____COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97366

EPC NO. 9720

PROJ. NO.

TYPE OF SUBMITTAL:

_____DRAINAGE REPORT

_X_ DRAINAGE PLAN

_____CONCEPTUAL GRADING & DRAINAGE PLAN

_X_ GRADING PLAN

_____EROSION CONTROL PLAN

_____ENGINEER'S CERTIFICATION

RECEIVED
APR 25 2001
HYDROLOGY SECTION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT

_____PRELIMINARY PLAT

_____SITE DEVELOPMENT PLAN

_____FINAL PLAT

_X_ BUILDING PERMIT

_____FOUNDATION PERMIT

_____CERT. OF OCCUPANCY

_X_ ROUGH GRADING PERMIT

_____GRADING / PAVING PERMIT

_____OTHER

DATE SUBMITTED: April 25, 2001 - RESUBMITTAL

BY: C.L. Weiss Engineering, Inc.

APPLICANT'S NAME CHANT ASSOC. ZONE ATLAS/DRNG FILE # _____

DRB # _____ EPC # _____ WORK ORDER # _____

LEGAL DESCRIPTION JEFFERSON COMMONS II NMMCC (E17/D63A)

CITY ADDRESS _____

ENGINEERING FIRM: CHRIS WEISS ENG. CONTACT: OGUZ ERI

ADDRESS: _____ PHONE. 344-1633

OWNER: GEORGE CHAN CONTACT: _____

ADDRESS: P.O. BOX 3529 PHONE: _____

ARCHITECT: BERENT GROTH CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: RON FORSTBAUER CONTACT: _____

ADDRESS: _____ PHONE _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS _____ PHONE _____

TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (PRELIM)
- ___ OTHER _____

PRE-DESIGN MEETING:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAT APPROVAL
- ___ PRELIMINARY PLAT APPROVAL
- ___ S DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- X CERTIFICATE OF OCCUPANCY APPROVAL (temp)
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- ___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 9/1/00

BY _____

Revised 02/98

RECEIVED
SEP 01 2000
HYDROLOGY SECTION

30 day 9/1 temp (to avoid liq. Dam.)

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

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

September 1, 2000

Mr. Bradley L. Bingham, PE
Hydrology Review Engineer
City of Albuquerque

RE: JEFFERSON COMMONS II – NMMCC (F17/D63A)

Dear Mr. Bingham,

Enclosed with this letter is an exhibit with as-built spot elevations at the building FF and as noted. In addition, I have conducted a site inspection of the construction to ascertain that the site drainage / grading visually follows the approved drainage / grading plan. A complete as-built survey will be prepared by Forstbauer Surveying LLC, next Wednesday followed by our final Engineer's Certification to be submitted by Monday, Sept. 11.

Based on today's site inspection, the site appears to be in substantial compliance with the approved drainage / grading plan with the following exceptions to be addressed:

Site appears to be in compliance w/ approved DG plan. No areas of exception were apparent

BJB 9/1/00

Our client understands that this is not the final Engineer's Certification and that additional problem areas may be identified during our final analysis and inspection. We sincerely appreciate your assistance with this matter.

Please don't hesitate to call me at 266-3444 or Chris Weiss at 281-1800 with any questions or comments.

Sincerely,

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

RECEIVED
SEP 01 2000
HYDROLOGY SECTION

asphalt paving

Singer Boulevard NE

Office Boulevard NE

Office Boulevard NE

right-of-way varies

asphalt paving

overhead utilities

675.11'

F.F.
5137.0

5137.3±

9/1/00
FIELD SHOT
BY CONTRACTOR
w/ C.L. WELLS

F.F.
5137.0
(future)

RECEIVED
SEP 01 2000
HYDROLOGY SECTION

BUILDIN
70,0

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

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

Wednesday, April 25, 2001

Mr. Stuart Reeder, P.E.
Hydrology Division
City of Albuquerque

RE: JEFFERSON COMMINS II – LOT 6 GRADING AND DRAINAGE PLAN (F17/D63A)

Dear Mr. Reeder,

Enclosed with this letter is a revised copy of the above-mentioned project as well as a copy of your letter of approval dated May 17, 2000. Revisions incorporate architectural site plan revisions as follows:

1. Building / parking locations and layouts have been modified.

2. Proposed storm sewer has been modified as required. Revisions to design calculations are included with this submittal.

None of the revisions affect the overall drainage concept as previously approved. Grades have been adjusted as required to accommodate the new site plan features.

Please don't hesitate to call me at 266-3444 or Chris Weiss at 281-1800 with any questions or comments.

Sincerely,

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

RECEIVED
APR 25 2001
HYDROLOGY SECTION

Figure 12

D.R.B. Case No. 973666
D.R.C. Project No. _____
Date Submitted: _____

EXHIBIT "A"
to Subdivision Improvements Agreement

Subdivision Improvements Agreement for: Preliminary Plat Approval _____
Site Development Plan Approval _____

DEVELOPMENT REVIEW BOARD (D.R.B.)
REQUIRED INFRASTRUCTURE LISTING

Jefferson Commons II
(name of project)

Following is a summary of Public/~~Private~~ Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
40'	Driveway Cut	Jefferson	500' N of Frontage Road	---
12'	Median Cut	Jefferson	500' N of Frontage Road	---
8"	Standard Curb / Gutter	Office (east)	Frontage Road	Singer
8"	Standard Curb / Gutter	Singer (south)	Office	200' w. of Jefferson
---	Arterial Paving	Singer (south)	Office	200' w. of Jefferson
10"	Water Main	Onsite	Office / Frontage	Singer / Jefferson
8"	Sanitary Sewer & 5 Manholes	Onsite	Office / Frontage	1400' into site
18"	Storm Sewer	Office	Vineyard Storm Sewer	24' n. of Vinyard
15' wide	Arterial Paving	Office Blvd.	Frontage Road	Singer

****

Development Review Board Member Approvals

_____ _____ _____
Traffic Date Water / Liquid Waste Date Parks & Rec. Date

_____ _____
City Engineer / AMAFCA Date DRB Chairman Date

Figure 12

D.R.B. Case No. 97306
D.R.C. Project No. _____
Date Submitted: _____

EXHIBIT "A"
to Subdivision Improvements Agreement

Subdivision Improvements Agreement for: Preliminary Plat Approval _____
Site Development Plan Approval _____

DEVELOPMENT REVIEW BOARD (D.R.B.)
REQUIRED INFRASTRUCTURE LISTING

Jefferson Commons II
(name of project)

Following is a summary of ~~Public~~/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
54"	RCP Storm Drain 1	Onsite	Office 60" Storm Drain	63' into site
	Inlet / Junction Box 1	Onsite	SD1	---
36"	Metal Pipe Storm Drain 2	Onsite	Box 1	315' to Box 2
	Inlet / Junction Box 2	Onsite	SD2	---
24"	Metal Pipe Storm Drain 3	Onsite	Box 2	509' to Inlet 2C
48"	Metal Pipe Storm Drain 6	Onsite	Box 1	108' to Box 3
	Inlet / Junction Box 3	Onsite	SD6	---
42"	Metal Pipe Storm Drain 7	Onsite	Box 3	422' to Box 4
	Inlet / Junction Box 4	Onsite	SD7	---
36"	Metal Pipe Storm Drain 8	Onsite	Box 4	33' to MH1
6' Dia.	MH1	Onsite	Box 4	---
24"	Metal Pipe Storm Drain 9	Onsite	MH1	200' to Inlet 4A
36"	Metal Pipe Storm Drain 10	Onsite	Box 4	33' to MH2
6' Dia.	MH2	Onsite	Box 4	---
30"	Metal Pipe Storm Drain 12 & 13	Onsite	MH2	200' to Inlet 4D
24"	Metal Pipe Storm Drain 14 & 15	Onsite	Inlet 4D	200' to Inlet 4F
18"	Metal Pipe Storm Drain 16	Onsite	Inlet 4F	100' to Inlet 4G

****

Development Review Board Member Approvals

_____ _____ _____
Traffic Date | Water / Liquid Waste Date | Parks & Rec. Date

_____ _____
City Engineer / AMAFCA Date | DRB Chairman Date

BLVD
JEFFERSON
OFFICE
AV

CITY OF ALBUQUERQUE

March 31, 2005

Mr. Scott McGee, P.E.
ISAACSON & ARFMAN, PA
128 Monroe St. NE
Albuquerque, NM 87108

Re: JEFFERSON COMMONS II – LOT 6, BUILDING C
5411 Jefferson St. NE
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 07/22/2003 (F-17/D63)
Certification dated 03/30/2005

Dear Scott:

Based upon the information provided in your submittal received 03/31/2005, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

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

Sincerely,

Arlene V. Portillo

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

C: Phyllis Villanueva
File

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

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV. 1/28/2003rd)

PROJECT TITLE: Jefferson Commons II – Lot 6 Buildings C
ZONE MAP / DRG. FILE #: F-17/D63
DRB #: _____ EPC #: _____
WORK ORDER #: _____

LEGAL DESCRIPTION: A portion of Parcel 6 - Digital Properties, Albuquerque, NM
CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Arfman, P.A.
CONTACT: Scott M. McGee
ADDRESS: 128 Monroe St. NE
PHONE: 268-8828
CITY, STATE: Albuquerque, NM
ZIP CODE: 87108

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

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

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

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

CHECK TYPE OF SUBMITTAL:
_____DRAINAGE REPORT
_____DRAINAGE PLAN 1ST *REQUIRES TCL or equal*
_____DRAINAGE PLAN RESUBMITTAL
_____CONCEPTUAL GRADING & DRAINAGE PLAN
_____GRADING PLAN
_____EROSION CONTROL PLAN
__X__ENGINEER'S CERTIFICATION (HYDROLOGY)
_____CLOMR / LOMR
_____TRAFFIC CIRCULATION LAYOUT (TCL)
_____ENGINEER'S CERTIFICATION (TCL)
_____ENGINEER'S CERTIFICATION (DRB APPR, SITE PLAN)
_____OTHER

CHECK TYPE OF APPROVAL SOUGHT:
_____SIA / FINANCIAL GUARANTEE RELEASE
_____PRELIMINARY PLAT APPROVAL
_____S. DEV. PLAN FOR SUB'D APPROVAL
_____S. DEV. PLAN FOR BLDG. PERMIT APPR.
_____SECTOR PLAN APPROVAL
_____FINAL PLAT APPROVAL
_____FOUNDATION PERMIT APPROVAL
_____BUILDING PERMIT APPROVAL
__X__CERTIFICATE OF OCCUPANCY (PERM)
_____CERTIFICATE OF OCCUPANCY (TEMP)
_____GRADING PERMIT APPROVAL
_____PAVING PERMIT APPROVAL
_____WORK ORDER APPROVAL
_____OTHER

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____YES
_____NO
_____COPY PROVIDED

RECEIVED
MAR 31 2005
HYDROLOGY SECTION

DATE SUBMITTED: Thursday, March 31, 2005
BY: Scott M. McGee
Isaacson & Arfman, P.A.

Requests for approvals of Site Development Plans and / or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

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

PROJECT IR-025-4(65)223

I- 25 FRONTAGE ROADS-STAGE I

ROADWAY DRAINAGE DESIGN ANALYSIS

PREPARED FOR

NEW MEXICO STATE HIGHWAY DEPARTMENT

FEBRUARY, 1983

DENNEY-GROSS & ASSOC., INC.
ENGINEERS SURVEYORS PLANNERS
2400 COMANCHE RD. N.E., ALBUQ., NEW MEX. 87107
(505) 884-0696

Area 12

1. Area 12A to 3-36" RCP's at Station 253+75±

   Total Area = 132.0 acres

   Area Description: Developing area with ponding in effect, most sites have ponds C = 0.5

   Longest Path: 1450' in earth swale at 2.5% slope V = 2.5 fps $^{k}1.5\%$

   2350' in pavement at 1.2% slope V = 2.2 fps $^{k}2.0$

   Tc = [1450/(2.5)(60)] + [2350/(2.2)(60)] = 9.6 + 17.4 = **27 min.**

   I_{100} = 3.5 in/hr

   Q_{100} = CIA = (0.5)(3.5)(132.0) = 231 cfs

2. Area 12A and 12B

   Total Area = 141.0 acres

   Q_{100} = CIA = (0.5)(3.5)(141.0) = 246 cfs

Area 13

1. Area 13A to 36" at Station 267+00±

   Total Area = 24.0 acres

   Area Description: Partially developed areas with ponding requirements C = 0.5

   Longest Path: 2000' in streets @ 2% slope V = 3.0 fps

   600' in earth swale @ 2.5% slope V = 2.5 fps

   Tc = [2000/(3)(60)] + [600/(2.5)(60)] = 11.1 + 4 = 15 min.

   I_{100} = 4.5 in/hr

   Q_{100} = CIA = (0.5)(4.5)(24.0) = 54 cfs

2. Area 13A and 13D

Total Area = 28.0 acres

Q_{100} = CIA = (0.5)(4.5)(28.0) = 63 cfs

Area 14

1. Area 14A to 36" RCP at Station 274+60±

Total Area = 41.0 acres

Area Description: Mostly undeveloped, Uncle Cliff's Amusement Park in area C = 0.4

Longest Path: 1200' of sheet flow @ 2% slope V = 1.6 fps

800' grassed waterway @ 2% slope V = 2.2 fps

Tc = [1200/(1.6)(60)] + [800/(2.2)(60)] = 13 + 6 = 19 min.

I_{100} = 4.2 in/hr

Q_{100} = CIA = (0.4)(4.2)(41.0) = 68 cfs

2. Area 14A and 14B

Total Area = 45.5 acres

Q_{100} = CIA = (0.4)(4.2)(45.5) = 76 cfs

Area 15

Q_{100} = 2000 cfs per A.M.A.F.C.A. (see Exhibit "D")

Area 16

1. Area 16A

Total Area = 12.0 acres

Area Description: Mostly undeveloped except for Central Park Apartments. No ponding is apparent at Central Park Apartments, flat area C = 0.4

Longest Path: 700' on pavement @ 1% Slope V = 2.0 fps

1000' on overland flow @ 1% Slope V = 1.0 fps

Tc = [700/(2)(60)] + [1000/(1)(60)] = 5.8 + 16.7 = 22.5 min.

I_{100} = 3.9 in/hr

Q_{100} = CIA = (0.4)(3.9)(12.0) = 19 cfs

2. Area 16A and 16B to 24" RCP at Station 190+75±

Total Area = 17.0 acres

Q_{100} = CIA = (0.4)(3.9)(17.0) = 27 cfs

Area 17

1. Area 17A to 30" RCP crossing East Frontage Road at Station 305+00±

Total Area = 17.0 acres

Area Description: Developed area location of car lot. Large retention pond east for car lot C = 0.4

Longest Path: 1000' on pavement (parking lot) @ 1.5% V = 2.5 fps

300' on grassed waterway @ 2% V = 2.2 fps

Tc = [1000/(2.5)(60)] + [300/(2.2)(60)] = 6.6 + 2.2 = 8.8 min. use 10 min.

I_{100} = 5.4 in/hr

Q_{100} = CIA = (0.4)(5.4)(17.0) = 37 cfs

2. Area 17A-17E to 30" crossing on West Frontage Road at Station 306+50±

Total Area = 24.8 acres

I_{100} = 5.4 in/hr

Q_{100} = CIA = (0.4)(5.4)(24.8) = <u>54 cfs</u>

<u>Area 18</u>

1. Area 18A to 30" RCP crossing east of Frontage Road

Total Area = 3.0 acres

Area Description: Highway and large highway median area
C = 0.4

I_{100} = 5.4 in/hr

Q_{100} = CIA = (0.4)(5.4)(3.0) = <u>6.5 cfs</u>

2. Area 18A-18E to 30" RCP crossing Osuna at Station 316+00±

Total Area = 14.0 acres

I_{100} = 5.4 in/hr

Q_{100} = CIA = (0.4)(5.4)(14.0) = <u>30 cfs</u>

<u>Area 19</u>

1. Area 19A

Total Area = 8.0 acres

Area Description: Some development including Osuna Road C = 0.5

Longest Path: 1150' on street @ 2.8% V = 3.4 fps

300' on grassed waterway @ 2% V = 2.2 fps

Tc = [1150/(3.4)(60)] + [300/(2.2)(60)] = 5.6 + 2.3 = 7.9 min.
Use 19 min.

I_{100} = 5.4 in/hr

Q_{100} = CIA = (0.5)(5.4)(8.0) = 22 cfs

2. Area 19A and 19B

Total Area = 14.0 acres

Q_{100} = CIA = (0.5)(5.4)(14.0) = 38 cfs

PEAK RATES OF DISCHARGE FOR SMALL WATERSHEDS

CHAPTER 2

(REVISED 10/73 FOR NEW MEXICO)

(UPDATED 2/85)

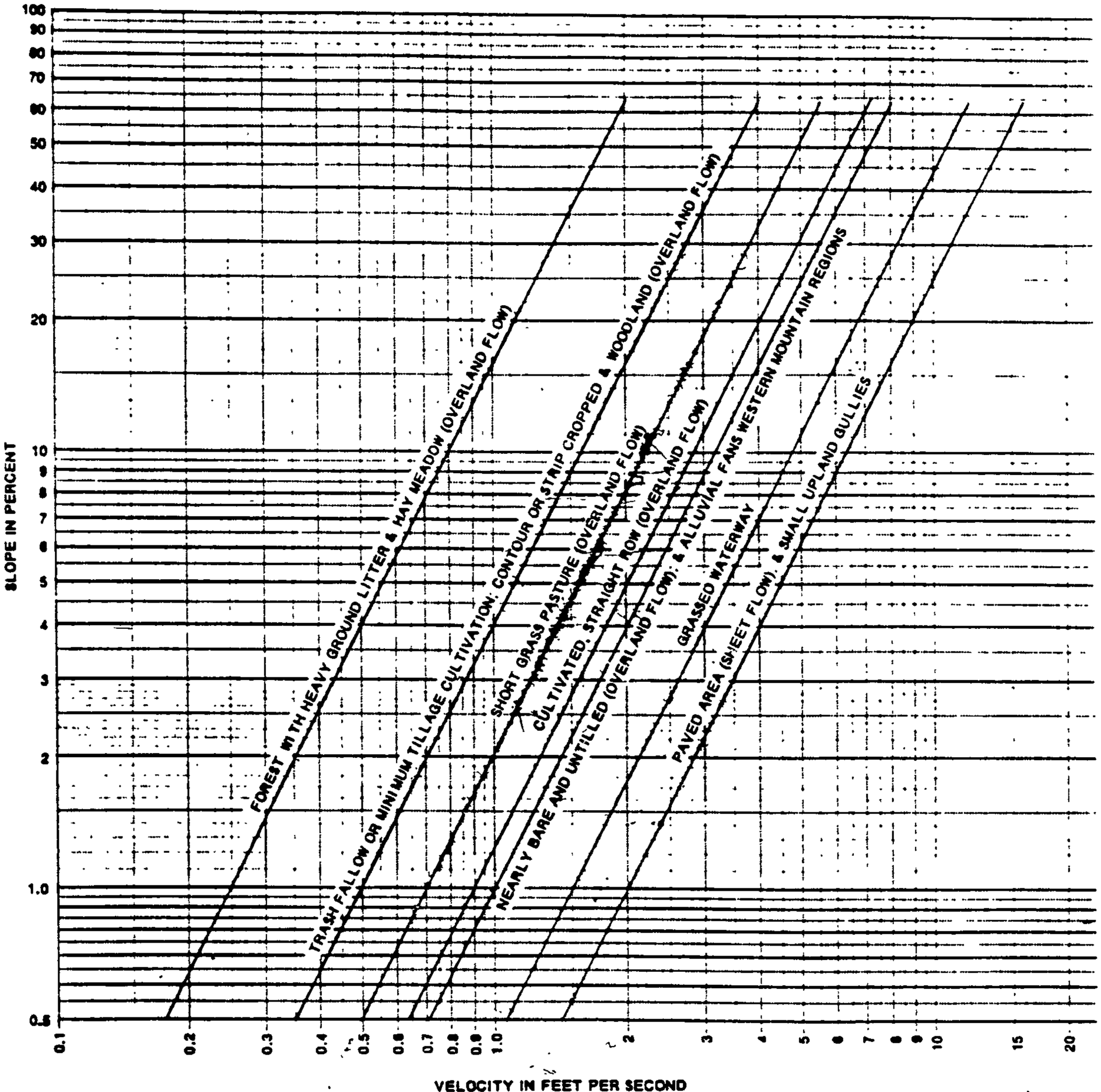
ENGINEERING FIELD MANUAL FOR CONSERVATION PRACTICES

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Table 2-2. Runoff Curve Numbers for Hydrologic Soil-Cover Complexes (Average antecedent moisture condition and Ia = 0.2 S)

Land Use	Cover Treatment or Practice	Hydrologic Condition	Hydrologic Soil Group A	B	C	D
Fallow	Straight row	---- 1/	77	86	91	94
Row crops	" "	Poor 1/	72	81	88	91
		Good 1/	67	78	85	89
	Contoured	Poor 2/	70	79	84	88
		Good 2/	65	75	82	86
	" and terraced	Poor 2/	66	74	80	82
		Good 2/	62	71	78	81
Small Grain	Straight row	Poor 1/	65	76	84	88
		Good 1/	63	75	83	87
	Contoured	Poor 2/	63	74	82	85
		Good 2/	61	73	81	84
	" and terraced	Poor 2/	61	72	79	82
		Good 2/	59	70	78	81
Close-seeded or Legumes 3/ or Rotation Meadow	Straight row	Poor	66	77	85	89
		Good	58	72	81	85
	Contoured	Poor	64	75	83	85
		Good	55	69	78	83
	" and terraced	Poor	63	73	80	83
		Good	51	67	76	80
Pasture or range 4/5/		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
	Contoured	Poor	47	67	81	88
		Fair	25	59	75	83
		Good	6	35	70	79
Commercial and business areas (85% impervious)			89	92	94	95
Industrial districts (72% impervious)			81	88	91	93
Residential: 6/						
Average lot size		Average % Impervious				
1/8 acre or less		65	77	85	90	92
1/4 acre		38	61	75	83	87
1/3 acre		30	57	72	81	86
1/2 acre		25	54	70	80	85
1 acre		20	51	68	79	84
Paved parking lots, roofs, driveways, etc.			95	95	95	95
Streets and roads:						
paved with curbs and storm sewers			95	95	95	95
gravel			76	85	89	91
dirt			72	82	87	89
paved with open ditches			83	89	92	93

1/ Reduce CN by one for poor residue cover or reduce by three for good residue cover. For poor residue cover, less than 20% of the surface is covered (750 #/ac, row crops and 300 #/ac, small grain). For good residue cover, more than 20% of the surface is covered.
2/ Reduce CN by one for good residue cover.
3/ Close-drilled or broadcast.
4/ Figure 2-1 is the preferred method for determining CN on New Mexico rangeland.
5/ Use pasture or range for open spaces such as lawns, parks, golf courses, cemeteries, etc.
6/ Assumes runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns. Remaining pervious areas are considered to be in good pasture condition. Includes paved streets.

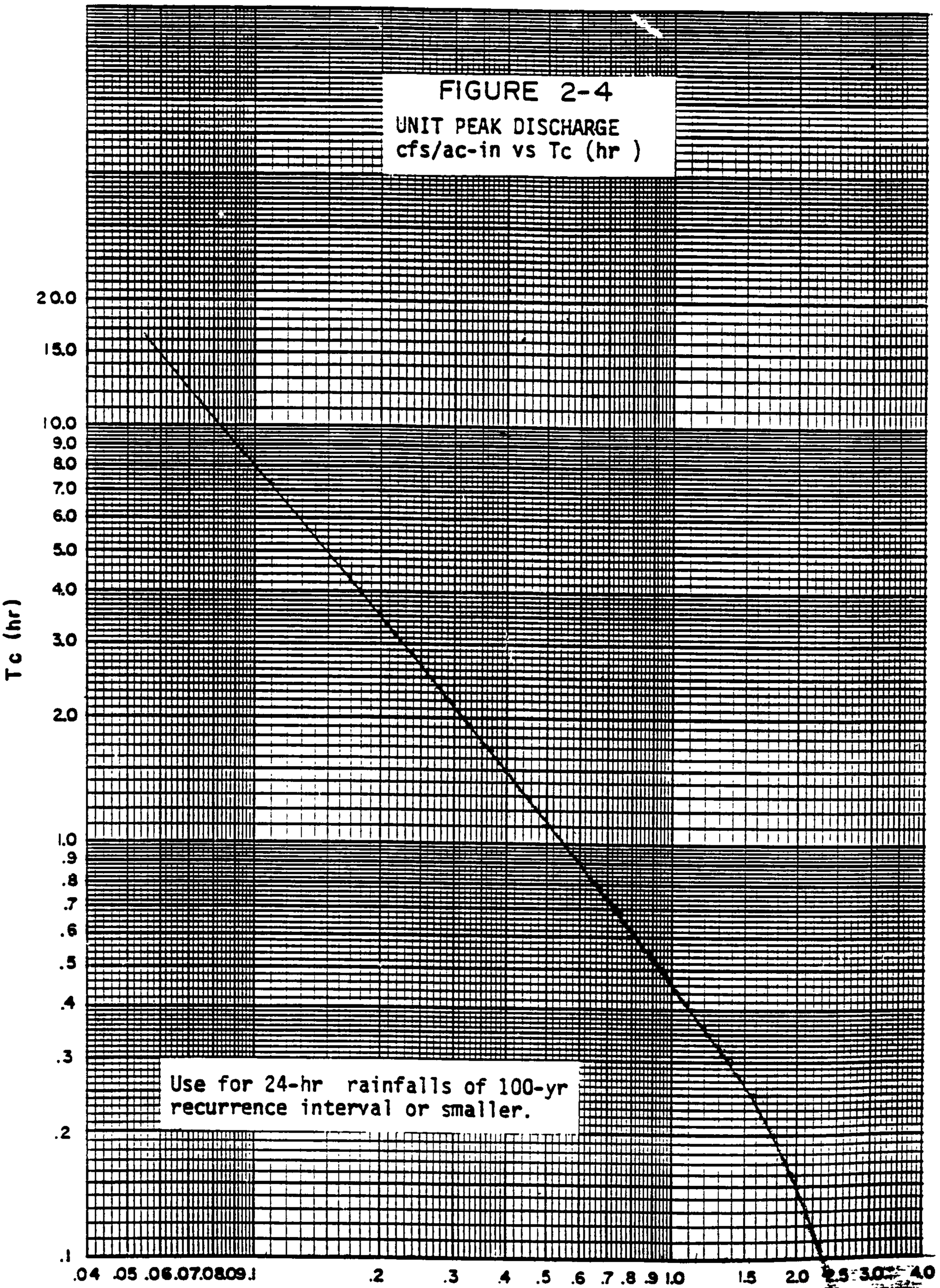


$$T_c = T_o = \frac{L}{V(3600)}$$

Figure 2-3. -Velocities for upland method of estimating T_c

FIGURE 2-4

UNIT PEAK DISCHARGE cfs/ac-in vs Tc (hr)



Flood &
Control
Authority

2600
PROSPECT
AVE.
N.E.

P. O. BOX 25851
ALBUQUERQUE, N. M. 87125

DENVER METRO

DESIGN GUIDELINES & CRITERIA

CHANNELS & HYDRAULIC STRUCTURES ON SANDY SOIL

SIMONS, LI
& ASSOCIATES

JUNE, 1981

where, Y_1 = the upstream flow depth,

a = the embankment length measured normal to the bank,

Fr_1 = the upstream Froude number.

If the embankment terminates at a vertical wall on the upstream side, then the scour depth in sand nearly doubles. That is,

$$\frac{Y_s}{Y_1} = 2.15 \left(\frac{a}{Y_1} \right)^{0.40} Fr_1^{0.33} \qquad (3\text{-}8)$$

Field data for scour at embankments for various size rivers is scarce, but data collected at rock dikes on the Mississippi River indicate that

$$\frac{Y_s}{Y_1} = 4\ Fr_1^{0.33} \qquad (3\text{-}9)$$

determines the equilibrium scour depth for large a/Y_1. It is recommended that Equations 3-7 and 3-8 be applied to embankments with $0 < a/Y_1 < 25$ and Equation 3-9 be used for $a/Y_1 > 25$. If $a/Y_1 > 25$, then scour depth is independent of a/Y_1 and depends only on the approach Froude number and depth of flow.

In applying Equations 3-7 and 3-8, the embankment length a is measured from the high waterline at the valley bank perpendicularly to the end of the embankment. A definition of the embankment length for a natural channel with riprap protection is shown in Figure 3-2. It is not uncommon to find depths to be 30 percent greater than equilibrium scour depth. Lateral extent of scour can be determined from the angle of repose of the material and scour depth.

3.7.2 Local Scour Downstream of Hydraulic Structures

The scour downstream of hydraulic structures, such as stilling basins, diversion works, and etc., occurs frequently in engineering application. Figure 3-3 summarizes the possible flow conditions downstream of hydraulic

5.5.2.8 Type V-3 Soil Conservation Service Type C Drop Spillway

The Type C drop spillways were developed utilizing theory supported by model studies as presented in the St. Anthony Falls Hydraulic Laboratory, Technical Paper No. 15, Series B, "Straight Drop Spillway Stilling Basin," by Charles A. Donnelley and Fred W. Blaisdell. The design of Type C drop spillways should conform to the limitations of the tested range. Structural configuration, design limitations, design procedures, and design examples can be found in The Engineering Handbook, Section 11 by the U.S. Soil Conservation Service.

5.5.2.9 Type V-4, Vertical Drops with Preshaped Riprap Basin

The riprap forming the stilling basin floor is preshaped to form a plunge pool. The depth of the plunge pool can be estimated using Equation 3-10.

Design should conform to dimensions obtained by model testing of the pool because of the serious problems which could occur with an improperly designed pool.

5.5.2.10 Type S-2, Riprap Sloped Drop Structure

The area in the vicinity of the drop crest is the most critical area for stabilizing the riprap. A crest wall is required and should be placed at an elevation higher than the upstream channel bed to ensure uniform flow distribution over the drop crest and to increase the stability of the drop crest. The riprap below the crest wall should be thicker than the riprap at the slope face. The thickness of riprap below the crest wall depends on drop height and riprap size. The crest wall should extend to a minimum depth of the thickness of riprap plus filter. Figure 5-11 shows the crest wall on a riprap sloped drop structure.

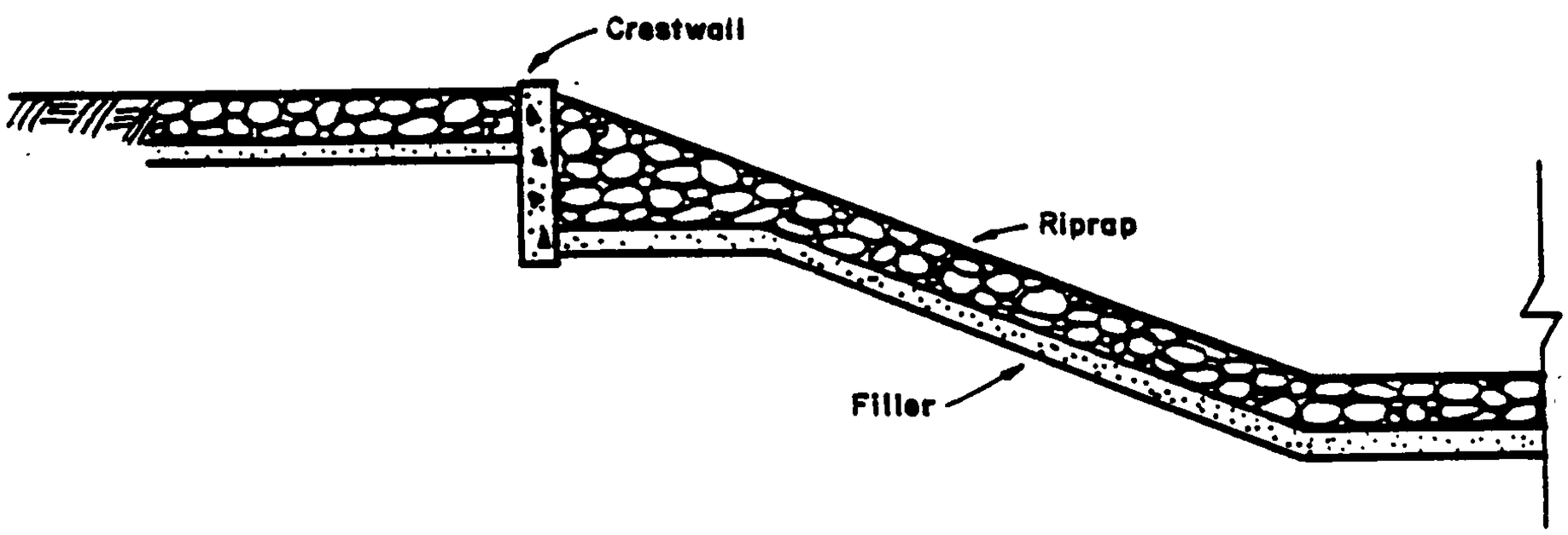


Figure 5-11. Crest wall on riprap drop structures.

both structures, there must be some means of controlling the flow at the top and dissipating the energy at the bottom of the structure. A definition sketch for a sloped drop structure is shown in Figure 5-10. A few of the differences are discussed as follows:

1. The aeration holes are not needed.
2. Sloped drop structures should have faces not steeper than 2:1.
3. Concrete sloped drop structures can be used for higher drops than vertical drop structures. Although, more structure length is required, this is more than compensated for by the reduction in vertical wall height.
4. The length of the structure should be

$$L = L_u + L_a + L_b \tag{5-13}$$

where, $L_u = 2H$,

$L_a = Zh$,

L_b = the hydraulic jump length,

H = the specific energy at the drop,

h = the height of the drop.

5. Chute blocks, baffles, and end sills may be added at concrete sloped drop structures to reduce the length of the structure. For the design of stilling basins with chute blocks, baffles, and end sills, refer to Hydraulic Design of Stilling Basins and Energy Dissipators, U.S. Bureau of Reclamation.

5.5.2.7 Design of Drop Structures

The principles of hydraulic design of drop structures are the same for all drop structures. Special features of different drop structures (see Tables 5-2 and 5-3) are presented in the following sections.

where, y = the end contraction on both sides of the abutment wall, feet,

L = the length of drop weir, feet,

H = specific energy at the drop, feet.

5.5.2.4 Stilling Basin Elevation

The proper elevation setting of the stilling basin floor is of greater importance than the length of the basin. The floor of the stilling basin must be set a sufficient depth below the minimum tailwater to confine the hydraulic jump to the basin at all times. If the tailwater depth D_2 is less than the sequent depth d_2, the hydraulic jump will form downstream of the basin. Therefore, the floor must be set either the sequent depth d_2 or the tailwater depth D_2 below the downstream water level, whichever is greater. A depression of one-quarter of the flow depth below the downstream channel bed at the stilling basin is common.

5.5.2.5 Stilling Basin Baffles and Sills

It is possible to reduce the jump length by the installation of accessories, such as baffles and sills, in the stilling basin. When an end sill is used, the jump length (L_b in Figure 5-9) can be reduced to $4d_2$. When both baffles and end sills are used, the jump length can be further reduced to $3d_2$.

For detailed design of baffles and sills, refer to Hydraulic Design of Stilling Basins and Energy Dissipators, U.S. Bureau of Reclamation.

5.5.2.6 Sloped Drop Structures

The use of sloped drops will generally result in lower cost installations. Sloped drops can be designed to fit the channel topography needs with little difficulty. The components of the sloped drop structure are basically the same as the vertical drop structure as described in Section 5.5.2.2. For

The length of the stilling basin must be extended at least one jump length beyond where the nappe strikes the floor, which is considered as the beginning of the jump. The jump length can be determined using Figure 2-4 of "Structures" in the Urban Storm Drainage Criteria Manual, Volume 2, for Froude numbers ranging from two to five. For Froude numbers larger than five, $L_b/d_2 = 6$ is recommended.

5.5.2.3 Aeration

A vertical drop must be aerated, otherwise a clinging nappe will result. Model tests show that the non-aerated vertical drop can sometimes result in unsteady flow and that the discharge coefficient has a wide range of variation. The nappe can be aerated by aeration holes or with a simple end contraction on the abutment wall at each end of the drop. The area of aeration holes required can be estimated by the following equation:

$$\frac{A}{L} = 5.3 \times 10^{-4} \left(\frac{H^{3.64}}{p^{1.64}} \right) \qquad (5\text{-}11)$$

where, A = required area of aeration hole or holes, inches^2,

L = length of drop weir, feet,

H = specific energy at the drop, feet,

p = differential pressure between atmosphere and pressure under the nappe, feet.

The drop should be aerated through both sidewalls. The minimum recommended diameter of aeration hole is six inches. The aeration hole should be placed above d_p as defined in Figure 5-9.

The aeration will also be adequate if the end contraction on the abutment wall y projects into the flow by an amount

$$y = (0.0008\ LH)^{1/2} \qquad (5\text{-}12)$$

where, y = the end contraction on both sides of the abutment wall, feet,

L = the length of drop weir, feet,

H = specific energy at the drop, feet.

5.5.2.4 Stilling Basin Elevation

The proper elevation setting of the stilling basin floor is of greater importance than the length of the basin. The floor of the stilling basin must be set a sufficient depth below the minimum tailwater to confine the hydraulic jump to the basin at all times. If the tailwater depth D_2 is less than the sequent depth d_2, the hydraulic jump will form downstream of the basin. Therefore, the floor must be set either the sequent depth d_2 or the tailwater depth D_2 below the downstream water level, whichever is greater. A depression of one-quarter of the flow depth below the downstream channel bed at the stilling basin is common.

5.5.2.5 Stilling Basin Baffles and Sills

It is possible to reduce the jump length by the installation of accessories, such as baffles and sills, in the stilling basin. When an end sill is used, the jump length (L_b in Figure 5-9) can be reduced to $4d_2$. When both baffles and end sills are used, the jump length can be further reduced to $3d_2$.

For detailed design of baffles and sills, refer to Hydraulic Design of Stilling Basins and Energy Dissipators, U.S. Bureau of Reclamation.

5.5.2.6 Sloped Drop Structures

The use of sloped drops will generally result in lower cost installations. Sloped drops can be designed to fit the channel topography needs with little difficulty. The components of the sloped drop structure are basically the same as the vertical drop structure as described in Section 5.5.2.2. For

The length of the stilling basin must be extended at least one jump length beyond where the nappe strikes the floor, which is considered as the beginning of the jump. The jump length can be determined using Figure 2-4 of "Structures" in the Urban Storm Drainage Criteria Manual, Volume 2, for Froude numbers ranging from two to five. For Froude numbers larger than five, $L_b/d_2 = 6$ is recommended.

5.5.2.3 Aeration

A vertical drop must be aerated, otherwise a clinging nappe will result. Model tests show that the non-aerated vertical drop can sometimes result in unsteady flow and that the discharge coefficient has a wide range of variation. The nappe can be aerated by aeration holes or with a simple end contraction on the abutment wall at each end of the drop. The area of aeration holes required can be estimated by the following equation:

$$\frac{A}{L} = 5.3 \times 10^{-4} \left(\frac{H^{3.64}}{p^{1.64}} \right) \qquad (5\text{-}11)$$

where, A = required area of aeration hole or holes, inches^2,

L = length of drop weir, feet,

H = specific energy at the drop, feet,

p = differential pressure between atmosphere and pressure under the nappe, feet.

The drop should be aerated through both sidewalls. The minimum recommended diameter of aeration hole is six inches. The aeration hole should be placed above d_p as defined in Figure 5-9.

The aeration will also be adequate if the end contraction on the abutment wall y projects into the flow by an amount

$$y = (0.0008\ LH)^{1/2} \qquad (5\text{-}12)$$

where, y = the end contraction on both sides of the abutment wall, feet,

L = the length of drop weir, feet,

H = specific energy at the drop, feet.

5.5.2.4 Stilling Basin Elevation

The proper elevation setting of the stilling basin floor is of greater importance than the length of the basin. The floor of the stilling basin must be set a sufficient depth below the minimum tailwater to confine the hydraulic jump to the basin at all times. If the tailwater depth D_2 is less than the sequent depth d_2, the hydraulic jump will form downstream of the basin. Therefore, the floor must be set either the sequent depth d_2 or the tailwater depth D_2 below the downstream water level, whichever is greater. A depression of one-quarter of the flow depth below the downstream channel bed at the stilling basin is common.

5.5.2.5 Stilling Basin Baffles and Sills

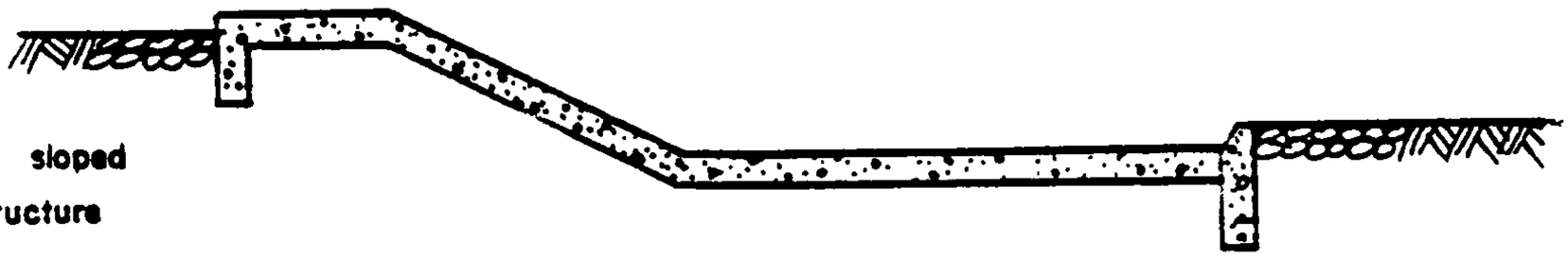
It is possible to reduce the jump length by the installation of accessories, such as baffles and sills, in the stilling basin. When an end sill is used, the jump length (L_b in Figure 5-9) can be reduced to $4d_2$. When both baffles and end sills are used, the jump length can be further reduced to $3d_2$.

For detailed design of baffles and sills, refer to Hydraulic Design of Stilling Basins and Energy Dissipators, U.S. Bureau of Reclamation.

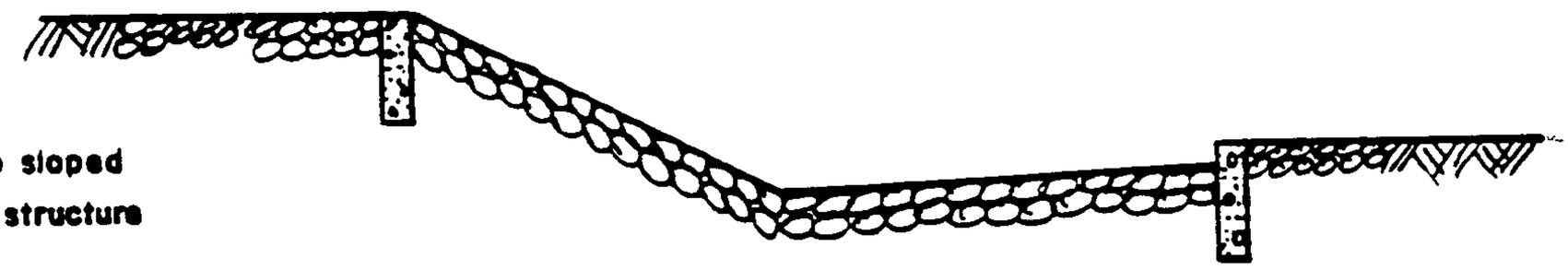
5.5.2.6 Sloped Drop Structures

The use of sloped drops will generally result in lower cost installations. Sloped drops can be designed to fit the channel topography needs with little difficulty. The components of the sloped drop structure are basically the same as the vertical drop structure as described in Section 5.5.2.2. For

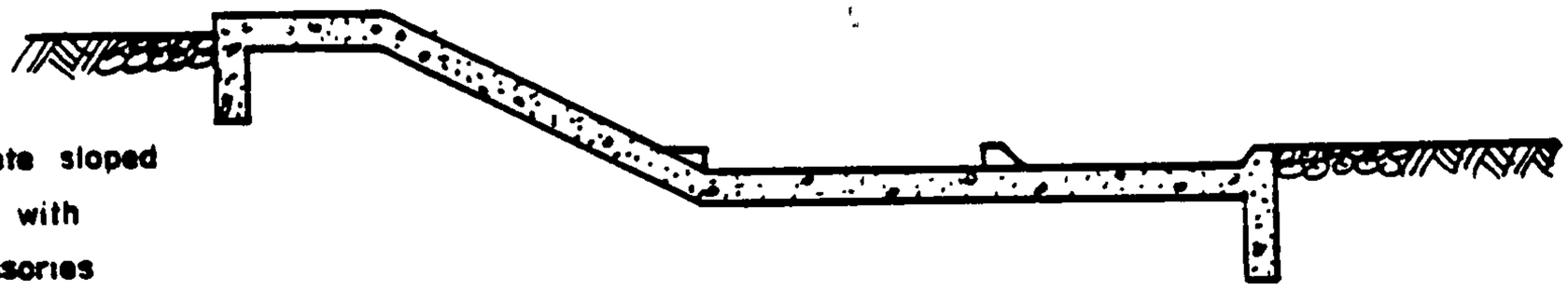
Table 5-3. Type of Sloped Drop Structures.



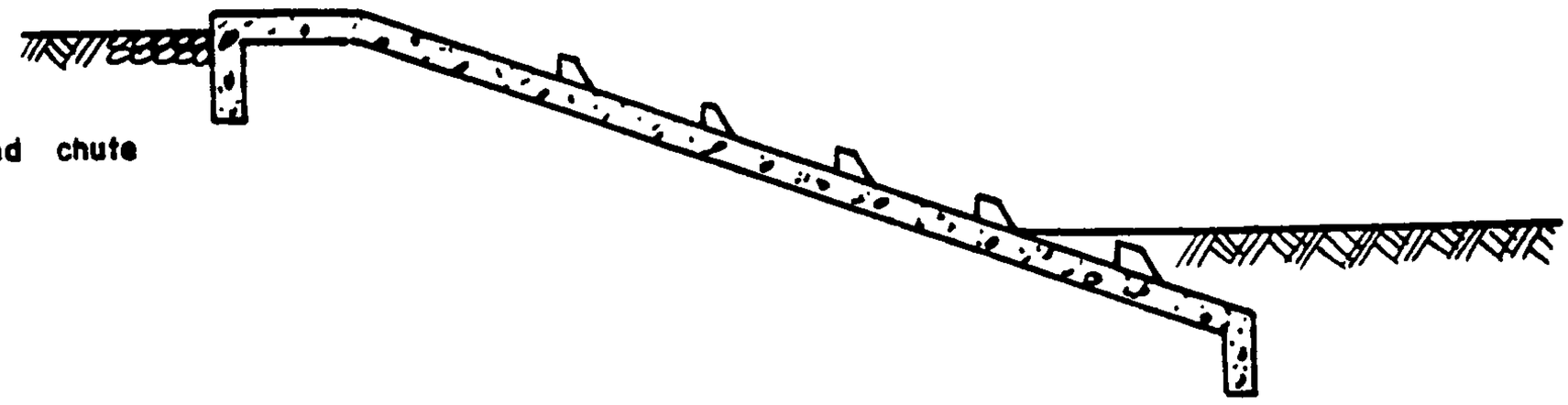
S-1. Concrete sloped drop structure



S-2. Riprap sloped drop structure



S-3. Concrete sloped drops with accessories



S-4 Baffled chute drops

differentials, soil size and its characteristics, sediment transport and storage, seepage forces, uplift forces, and channel flow regime. The types of drop structures can be classified as vertical drop structures and sloped drop structures. Typical drop structures are presented in Tables 5-2 and 5-3. Drop structures using gabions are not recommended due to fast deterioration.

5.5.1.3 Width of Structure

The width of drop structures depends mainly on the design discharge. The width should be great enough to permit discharge into the downstream channel near regime conditions. In this regard, the minimum width of a structural concrete drop structure was suggested as

$$W = 1.0 \sqrt{Q} \qquad (5\text{-}4)$$

or the unit discharge should not be more than 100 cfs per foot. For riprap drop structures, the unit discharge should not be more than 35 cfs per foot.

5.5.1.4 Drop Height

The height of drop structures is usually governed by the available construction material, required structural stability, and cost. Small structures formed of riprap are usually most economical; however, if large rock is required, it is both expensive and difficult to find. Riprap drop structures should not be utilized if drop heights exceed four feet. Vertical drop structures are usually limited to eight feet because of the difficult stability problem and expensive construction associated with high vertical retaining walls. Grouted riprap drop structures can be used for drop heights of more than four feet, however, the differential hydrostatic pressure at the face may cause the grout to crack. Hence, grouted riprap must be provided with a well-designed underdrain system.

footings, or riprap. In urban drainage work it is often desirable to use more low head drops in lieu of a few higher drops.

In most cases, additional bank and bottom protection will be needed after the first runoff or two when erosional tendencies are field tested. For this reason, the engineer should allow in his estimates for monies to be spent during the first two years following construction completion.

Most common failures of drop structures on sandy soils are due to undermining, piping, or flow bypassing the structure. The important factors to be considered in designing drop structures are: (1) head differential; (2) seepage flow; (3) channel degradation; (4) lateral migration; and (5) local scour.

5.5.1 Design Criteria

5.5.1.1 Site Selection

The structure should be located in a reasonably straight section of channel with neither upstream nor downstream curves within 100 to 200 feet of the structure. The site selected must provide an adequate foundation for the structure. The foundation material must have the required supporting strength, resistance to sliding, and be reasonably homogenous so as to prevent differential or uneven settlement of the structure.

5.5.1.2 Type of Structure

The selection of the type of drop structure depends mainly on the hydraulic, morphologic, and soil characteristics of the channel, as well as the degree of protection against damage from storm runoff. Of course, political, environmental, and economic factors always play an important role in the selection; however, the selection of a drop structure type should also consider the range of discharges, flow depths and velocities, head

5.4.2.6.1 Solution.

1. Top width of the channel:

$$W = b + 2 \times 2.5d = 24 + 5 \times 10.2 = 75 \text{ feet.}$$

2. $r_c/W = 300/75 = 4.0$.

3. From Figure 3-10:

$$\tau_{ob}/\tau_o = 1.69.$$

4. From previous example,

$$V^2/R^{0.33} = 34.77.$$

5. The parameter $V^2/R^{0.33}$ at bend is equal to:

$$1.69 \times 34.77 = 58.76 < 70.$$

From Table 5-5 of Section 5.4.2 of "Major Drainage" in the Urban Storm Drainage Criteria Manual, Volume 2, Type L riprap should be used.

6. Riprap size, thickness, and filter requirements are the same as the example given in 5.4.2.2 of this report.

7. Superelevation, use Equation 3-15:

$$\Delta Z = \frac{V^2}{gr_c} W = \frac{(8.01)^2}{32.2 \times 300} \times 75 = 0.5 \text{ feet.}$$

The height of riprap protection at the outside bend should be 0.5 feet higher than the straight reach presented in Section 5.4.2.2.

8. Determine the riprap depth using the same procedures as presented in the example in Section 5.4.2.2.

5.5 Drop Structures

The use of channel drops permits adjustment of a thalweg which is too steep for the design conditions. The structures can be either vertical drops or sloped drops. The materials can be sheet piling, concrete walls and

structures which are of particular interest in major drainageway design. The term S represents the depth of scour, q is the discharge per unit width, and h_d the depth of flow downstream of the structure.

For the condition in Figure 3-3, a formula defining the scour depth was proposed by Schoklitsch in 1932. It can be written as

$$S = 4.75 \frac{H^{0.2} q^{0.5}}{D_{90}^{0.32}} - h_d \qquad (3\text{-}10)$$

where, S = the depth of the scour hole, meters,

h_d = the downstream water depth, meters,

q = the water discharge per unit width, cubic meters per second per meter,

D_{90} = the particle size for which 90 percent of the material is finer, millimeters,

H = the vertical distance between the energy grade line and the downstream water surface, meters.

This formula is in metric units. To use the units of S, H, and h_d in feet, q in cfs, and D_{90} in millimeters, the constant should be 3.75 instead of 4.75. Also, this equation has not been adequately validated for very large particle sizes ($D_{90} \geq 12$ inches). For larger sizes of particles, physical modeling, or some type of field verification based on performance of similar structures, is advised.

3.8 Total Scour

THE TOTAL SCOUR THAT CAN OCCUR AT A STRUCTURE OR PERTINENT LOCATION IS EQUAL TO THE SUM OF DEGRADATION, GENERAL SCOUR, LOCAL SCOUR, AND ONE HALF OF THE ANTIDUNE HEIGHT. Bank protection and protection at structures should extend to a depth below the channel bed equal to the total scour.

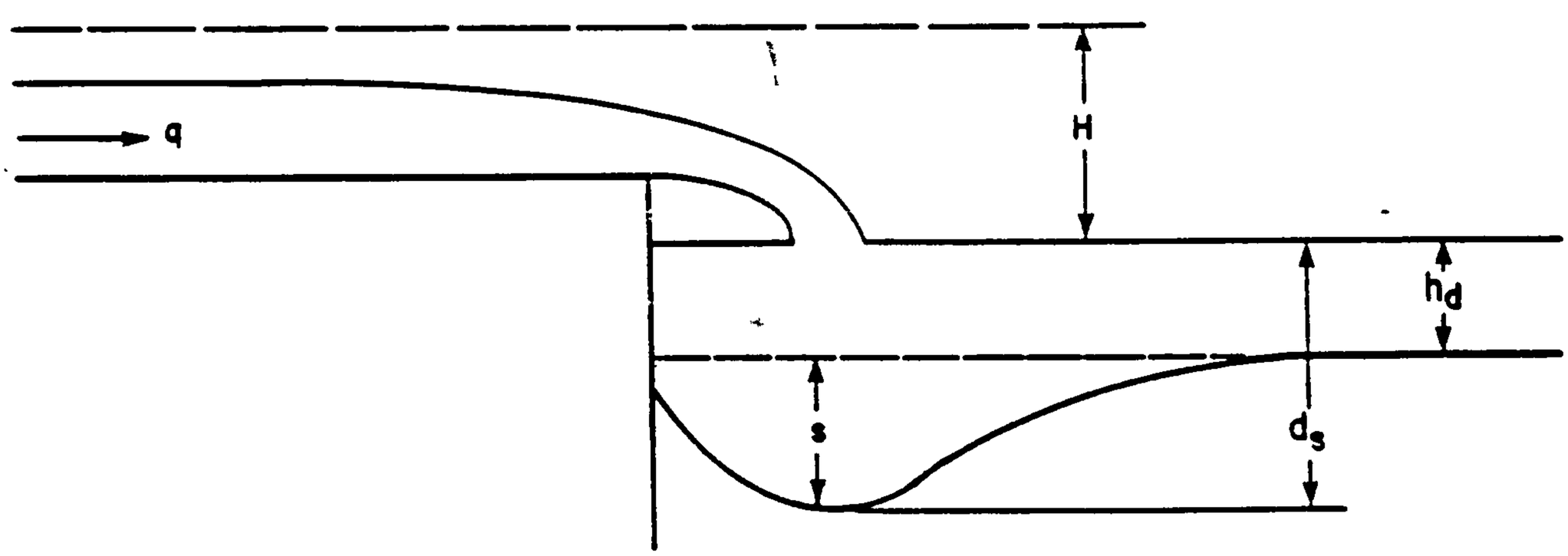


Figure 3-3. Erosion that can take place downstream of hydraulic structures.

RECEIVED
SEP 07 1989
HYDROLOGY SECTION

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

By: RVH
8-14-89

JEFFERSON INTERCHANGE, OFFICE BLVD. & VINEYARD ARROYO

I. EXISTING CONDITION WITH FLOOD PLAIN ACROSS DIGITAL PROPERTY.

ANALYSIS:

Before the diversion of run off across Digital lot between office Blvd. and west Frontage Road at south of Jefferson Interchange, drainage basin into the West Frontage Road is 28 AC and at office Blvd is a total of 172 AC where in 141 AC discharges into 3-36" culverts, the total drainage area to the end of the channel is 309 AC.

References

1. SCS Peak Rates of Disch. for Small watersheds
2. AMAFCA Design Guidelines and Criteria for channels and Hydralic structures
3. Denney-Gross & Assoc. Drainage Report on I-25 Interchanges Project.

RAINFALL: Albuq Rain Gage by US weather Bureau
100 yr = 2.16" (NOAA 2.69") /24 hrs (copy attached)

SOIL
Bernalillo Soil Report, Soil Group B

CURVE NUMBER
Fully developed Area, 50% business & 50% Residential CN = $\frac{92+75}{2}$ = 84

Time of concentration: Paved Area & Upland gullies

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

Direct Runoff: q_{100} = 0.862"

Runoff along West Frontage Road channel:

DA = 28 AC L = 3050 Δh = 66.7 cfs/Ac-in = 1.39

TC = 0.292 28AC disch. from 1-36" culvert

Q_{100} = 1.39 X 28 X .862 = 34 AC.

From Sta. 1571.3 to STA 527+00 (at 3-36" culverts)

Runoff along North office Blvd. channel:

DA = 28 + 141 + 2.8 = 172 AC.

141 ↑ 3-36" CULVERTS ; 2.8 ← NW of OFFICE BLVD & Frontage Road

L = 3050 + 1120 = 4170 Δh = 66.7 + 16.6 = 83.3

Tc = 0.292 + 0.135 = 0.427 cfs/Ac-in = 1.05

Q_{100} = 172 X 1.05 X .862 = 156 cfs

Total Runoff at inlet of 2-60" cmp's:

DA = 141 (12A&B) + 34 (13A&B) + 28 + 43 (DIG) + 45.5 (14A&B) + 14 + 2.8 = 309 AC

141: 3-36" ; 34: SW interchange ; 43: NW interchange ; 45.5: 1-36" ; 14: 1-36" (19A&B) ; 2.8

L = 1450 + 2350 + 870 = 4670 Δh = 38.2 + 44 = 82.2

Tc = 0.122 + 0.381 = 0.503 cfs/Ac-in = 0.940

Q_{100} = 309 X 0.940 X .862 ≈ 254 cfs

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

II PROPOSED CONDITION W/ COMBINED FLOWS INTO WEST FRONTAGE ROAD CHANNEL

CN = 84, see sheet 1

DIRECT RUNOFF: q_{100} = 0.862", see sheet 1 & 2

TIME of CONCENTRATION: Paved Area & Upland gullies

ANALYSIS:

Drainage basins to the north of Jefferson Interchange discharge to the north end of the channel. The 3-36" culverts across I-25 and drain into channel bend at Office Blvd. & SB Frontage take runoff from the east of I-25.

RUNOFF Along West Frontage Road Channel

STA 282 +20, 1-30" = 14 Ac
STA 274 +60, 1-36" = 45.5 Ac
STA 267+00, 1-36" = 28 Ac
NW of Interchange = 43 Ac

Total DA = 130.5Ac

L = 1450 + 1970 = 3420
Δh = 38.2 + 38.9 = 77

TC = 0.122 + 0.188 = 0.30
cfs/Ac-in = 1.36

Q_{100} = 131 X 1.35 X 0.862 = 153 cfs

RUNOFF AT OFFICE BLVD & Frontage Road Intersection

DA: UPSTREAM, see above = 130.5
STA 253+75, 3-36" = 141.0
NW of Office Blvd/Frontage = 2.8

Total DA = 274.3 Ac

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

$L = 1450 + 3000 = 4450$ $\Delta h = 38.2 + 57.4 = 95.6$

$Tc = 0.122 + 0.29 = 0.412$ $cfs/Ac\text{-}in = 1.07$

$Q100 = 275 \times 1.07 \times 0.862 = \underline{254 \text{ cfs}}$

$Q100$ w/o combined flows = 156 cfs

an increase of 98 cfs along office BLVD Channel

RUNOFF at 2-60" CMP's inlet on OFFICE BLVD

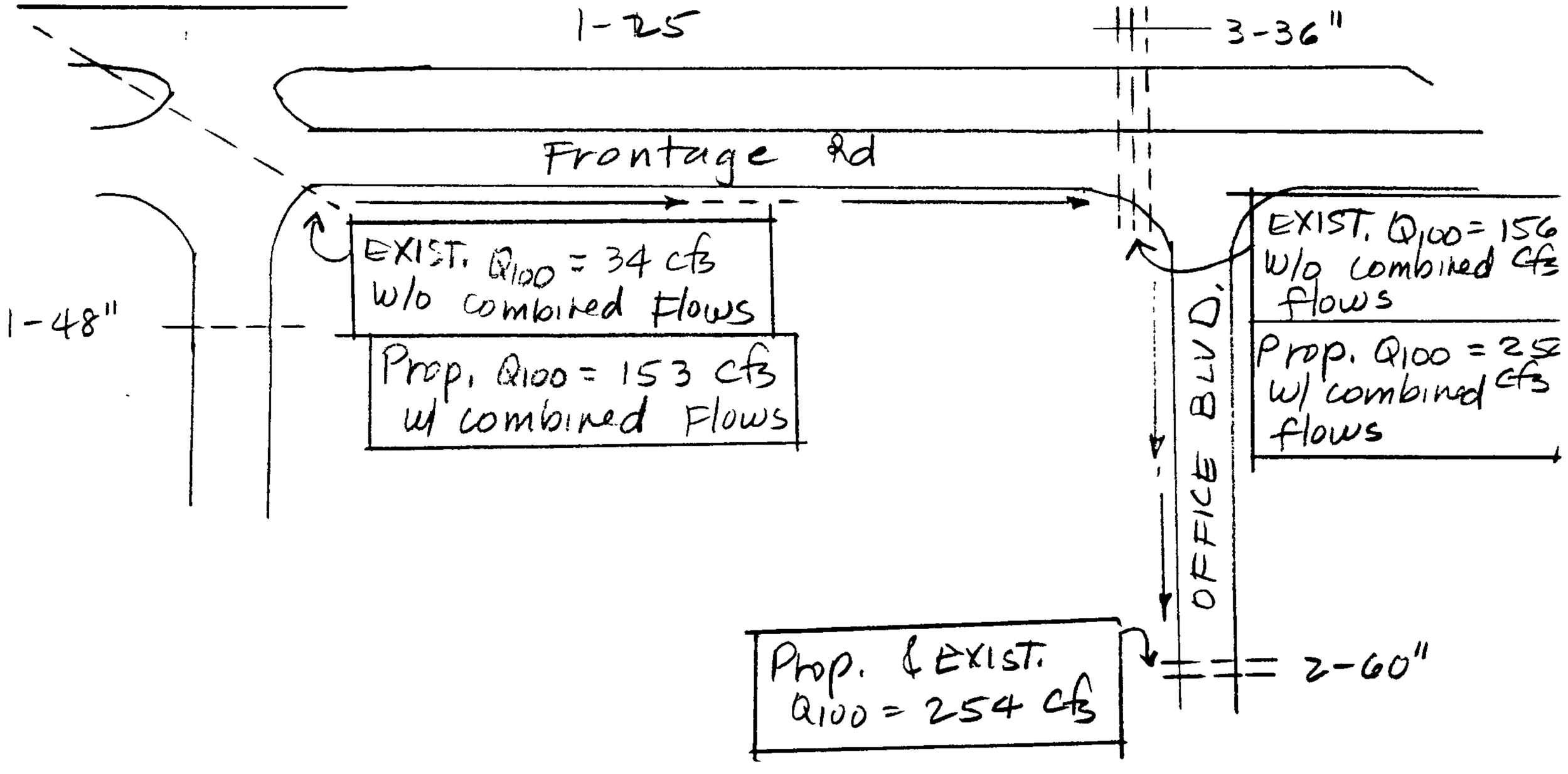
$DA = 2743 + 34 = 308.3$ AC

$L = 1450 + 3100 = 4550$ $\Delta h = 38.2 + 44 = 82.2$

$TC = 0.122 + 0.374 = 0.496$ $cfs/Ac\text{-}in = 0.952$

$Q100 = 309 \times 0.952 \times .862 = \underline{254 \text{ cfs}}$

SUMMARY

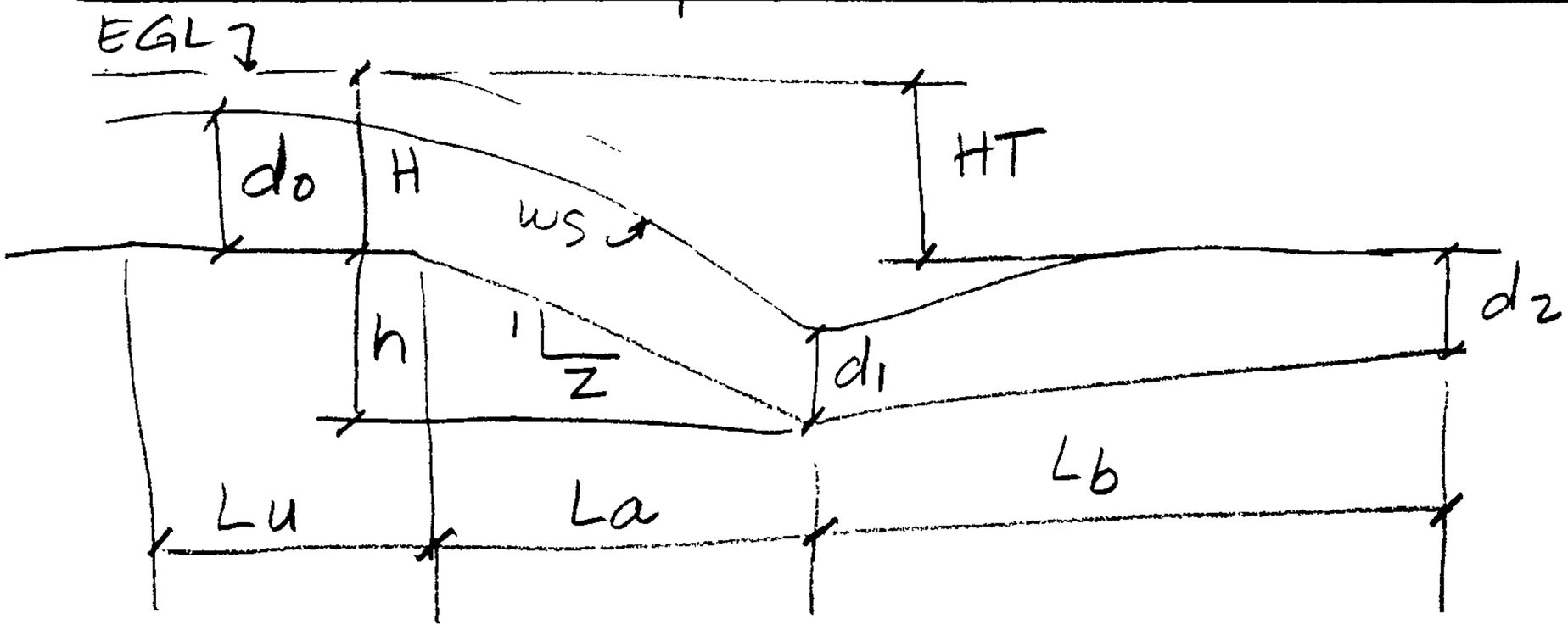


NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

DROP STRUCTURES

Ref: Amafco. Design Guidelines and Criteria for Channels and Hydraulic Structures:

Maximum drop is 3,35' at STA 7+42



Width of Structure

Ref P. 105

At Frontage Road: $W = 8'$

Max. unit discharge $= \frac{153}{8} = 19.1$ cfs/Ft $<$ 35 cfs/Ft (riprap) OK

AT OFFICE BLVD: $W = 15'$

max unit discharge $= \frac{254}{15} = 16.9$ cfs/Ft $<$ 35 cfs/Ft OK

From Hec2 Run:

$d_o = 1.79$ $H = 2.43$ $H_T = 3.9$ $h = 3.35$

$d_1 = 0.78$ $d_2 = 1.38$

1. Trapezoidal lined drop. cross section is the same as the channel cross section.

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

2. 4:1 Slope at drop, max.

$L_u = 2H = 2 \times 2.43 = 4.86'$ min <u>use 10'</u>

$L_a = zh = 4.477 \times 3.35 = 15'$

L_b = hydraulic jump length

$$Fr = \frac{V}{(gd_1)^{1/2}} = \frac{2.15}{(32.2 \times .78)^{1/2}} = 0.429$$

$$\frac{d_2}{d_1} = \frac{1}{2}\left(\sqrt{1 + 8Fr^2} - 1\right) = 0.286 \quad d_2 = 0.22$$

use $d_2 = 1.38$ (from HEC2 Run)

$L_b = 5.15\, d_2 = 7.1$ min. <u>use 20'</u>

<u>Scour downstream</u>

$$S = 3.75 \frac{H'^2 \times q'^{.5}}{(0.5)^{.32}} - hd$$

D particle = $\frac{1}{2}$ mm coarse sand

$hd = 2.04$, downstream water depth

$$= 3.75 \times \frac{(2.43)^{.2} \times \left(\frac{153}{8}\right)^{.5}}{(.5)^{.32}} - 0.78 = \underline{\underline{24'}}$$

use <u>$L_b = 25'$</u>

Rainfall

ALEXANDRIA WSFO AP 1950-1968 N = 19 STATION 5- 234.0 C CODE R

INPUT DATA

0.400	0.640	1.810	0.920	0.390	1.920	0.580	1.010	0.810	1.110
1.300	1.640	0.870	1.000	1.680	0.720	0.760	1.030	0.550	1.740
0.560	0.530	0.950	1.080	0.550	0.650	0.570	0.750	0.930	0.850
1.350	1.130	0.480	1.040	1.250	1.170	0.940	0.740	1.390	

MEAN LOGS = -0.044

STANDARD DEVIATION LOGS = 0.172

SKEWNESS LOGS = -0.180

STANDARD ERROR OF SKEWNESS LOGS = 0.378

EXCEEDANCE PROB	RECURRENCE INTERVAL	MAGNITUDES
0.9900	1.01	0.341
0.9500	1.05	0.462
0.9000	1.11	0.540
0.8000	1.25	0.650
0.5000	2.00	0.915
0.2000	5.00	1.267
0.1000	10.00	1.452
0.0400	25.00	1.707
0.0200	50.00	1.900
0.0100	100.00	2.100
0.0050	200.00	2.351

AREA 1W

AREA = 43.0 Ac = 0.0672 SQ M

% IMP = 75%

T_c = ~~15~~ 19 min $\Delta h = 20'$ $\ell = 1800'$

Slope = 1.11% K = 1.5

V = 1.58

$T_p = 12.6667 \times .7 = 0.2111$

AREA 2W

AREA = 36.8 Ac = 0.0575

% = 70% Imp

T_c = 7.9 min = Use 10 min $\Delta h = 24'$ $\ell = 1300'$

Slope = 1.85% K = 2.0

V = 2.7 FT/Sec

$T_p = 0.111111$

AREA 14A

41.0 Acres = 0.0641 SQMI

70% Imp

T_c = 19 min

T_p = 12.6667 min = 0.2111

A = 7.5 B = 15% C = 7.5 D = 70% ✓

AREA 14B

4.5 Acres = 0.0070 SQMI

80% Imp

T_c = 10 min

~~AREA 15~~

AREA 19A

8.0 Acres = 0.0125 SQMI

70% Imp

T_c = 19 min

T_p = 12.6667 min = 0.2111

AREA 19B

Goes 4.1 Acres = 0.0064 SQMI

80% Imp

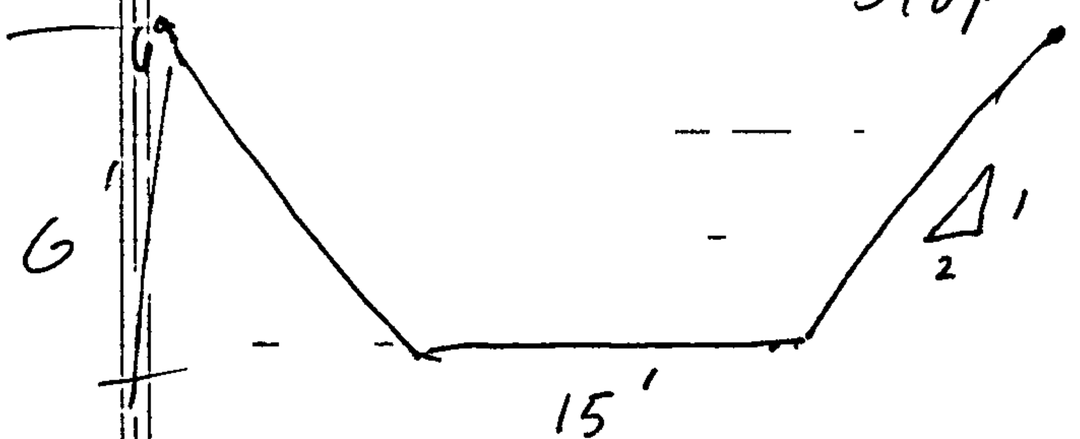
T_c = 10 min

AREA Q Elev

R1 =

ℓ = 550'

Slope = .003



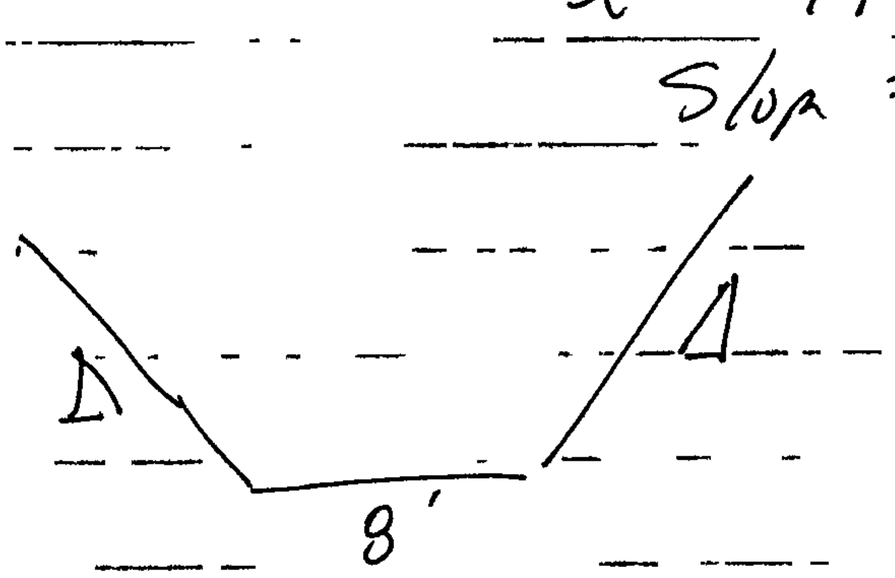
n = .013

dist	elev
0	106
12	100
27	100
39	106

R2

ℓ = 1130

Slop = 0.003 n = .013

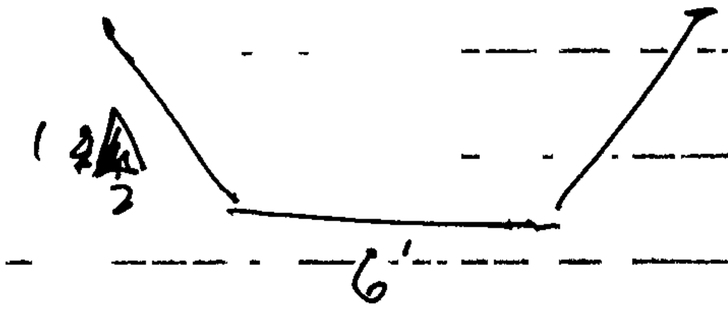


dist	elev
0	106
12	100
20	100
32	106

R3 = 60" RCP — 2%'
l = 250'

R4 -

l = 600' Slope = 1.67%
n = 0.045



dist	elev
0	104
8	100
14	100
22	104

R-5

l = ~~800~~ 450', Slope = 1.75%
n = 0.095

dist	elev
0	104
8	100
14	100
22	104

R6

3 - 36" ϕ RCP
$\ell = 350'$ Slope = 1.23%
n = 0.013

R7

1 - 48" ϕ RCP $\ell = 500'$ Slope = 2.34
n = 0.013

R8

1 - 36" ϕ RCP $\ell = 410'$ Slope = ~~2.06~~ 2.30
n = 0.013

R9

1 - 30" ϕ RCP ~~$\ell = 320'$ Slope~~
$\ell = 700'$ Slope = 1.78%
n = 0.013

R10

1 - 36" ϕ RCP 850' Slope = 0.95%
n = 0.013.

Jefferson / I 25 / Vineyard Arroyo

Zone Atlas F-17

$P_{60} = 2.01^{IN}$ $P_{360} = 2.34_{IN}$ $P_{1440} = 2.68$

AREA 12 A -

AREA = 132.0 ACRES = 0.2063

70% IMP -

$t_c = 27$ min

$T_p = 18.000 = 0.3000$

AREA 12 B

AREA = 9.0 ACRES = 0.0141 SM

80% IMP

$t_c = 10$ min

AREA 13 A

AREA = 24.0 Ac = 0.0375

70% IMP

$t_c = 15$ min

$t_p = 10.0$ min = 0.1667

AREA 13 B =

Area = 4.0 Ac = 0.0063 SM

80% IMP

$t_c = 10$ min.

	*	COMPUTE VINEYARD ARROYO @ I 25
	START	TIME = 0.00
19A	COMPUTE NM HYD	ID = 1 HYD NO = 319.0 DA = 0.0125 SQMI
		PER A = 7.5 PER B = 15.0
		PER C = 7.5 PER D = 70.0 TP = 0.2111 HR
		RAIN ONE = 2.01 RAIN SIX = 2.34
	PRINT HYD	ID = 1 CODE = 10
	COMPUTE RATING CURVE	RC = 1 VS NO = 1 CODE = -1
		Slope = 0.0178 DIAM = 2.5 FT
		n = 0.013
10	COMPUTE TRAVEL TIME	ID = 2 REACH NO = 9 INOVS = 1
		L = 700 SLOPE = 0.0178
	ROUTE	ID = 2 HYD NO = 319.1 INFLOW ID = 1
Insert See Back	PRINT HYD	ID = 2 CODE = 10
	COMPUTE RATING CURVE	RC = 1 VS NO = 1 NO SEGS = 1
		MIN ELEV = 100 MAX ELEV = 109
		CH SLP = 0.0175 FP SLP = 0.0175
		N = 0.045 DIST = 22.0
		DIST ELEV DIST ELEV
		0 104 8 100
		14 100 22 104
	COMPUTE TRAVEL TIME	ID = 1 REACH NO = 51 NO VS = 1
		~~Slope = 0.0175~~ L = 450 SLP = 0.0175
30	ROUTE	ID = 1 HYD NO = 319.2 INFLOW ID = 2
	PRINT HYD	ID = 1 CODE = 10
	COMPUTE NM HYD	ID = 2 HYD NO = 314.1 DA = 0.0641
14A		PER A = 7.5 PER B = 15.0
		PER C = 7.5 PER D = 70.0 TP = 0.2111
35		RAIN = -1

Insert

COMPUTE NM HYD 19B	ID = 1 HYD NO. 319.3 DA = 0.0064 SQMI PER A = 0 PER B = 10 PER C = 10 PER D = 80 TP = 0.111111 RAIN = -1
PRINT HYD	ID = 1 CODE = 10
ADD HYD	ID = 2 HYD NO = 319.4 IDS = 1 AND 2
20 PRINT HYD	ID = 2

PRINT HYD
COMPUTE RATING CURVE

ID = 2 CODE = 10
RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0230 DIAM = 3.0 η = 0.013

COMPUTE TRAVEL TIME
40
ROUTE
PRINT HYD

ID = 3 REACH NO = 8 NO VS = 1
L = 410 SLOPE = 0.0230 ✓
ID = 3 HYD NO = 314.2 INFLOW ID = 2
ID = 3 CODE = 10

REWRITE

COMPUTE NH HYD
14 B

ID = 2 HYD NO = 314.3 DA = 0.0070
PER A = 0 PER B = 10
PER C = 10 PER D = 80 TP = 0.111111
RAIN = -1

PRINT HYD
ADD HYD
PRINT HYD

ID = 2 CODE = 10
ID = 2 HYD NO = 314.4 IDS = 2 AND 3
ID = 2 CODE = 10

50 ADD HYD
PRINT HYD
COMPUTE RATING CURVE

→ ID = 1 HYD NO 314.5 IDS = 1 AND 2
ID = 1 CODE = 10
RC = 1 VS NO = 1 NO SEG = 1
MIN ELEV = 100 MAX ELEV = 104
CH SLP = 0.0167 FP SLP = 0.0167
N = 0.045 DIST = 22.0

DIST	ELEV	DIST	ELEV
0	104	8	100
14	100	22	104

COMPUTE TRAVEL TIME
60
ROUTE
PRINT HYD

ID = 2 REACH NO = 4 NO VS = 1
L = 600 SLP = 0.0167
ID = 2 HYD NO = 314.6 INFLOW ID = 1
ID = 2 CODE = 10

63 COMPUTE RATING-CURVE	RC = 1 VS NO = 1 CODE = -1
	SLOPE 0.02 DIAM = 5.0
	n = 0.013
COMPUTE TRAVEL TIME	ID = 1 REACH NO = 3 NO VS = 1
	L = 250 SLP = 0.02
ROUTE	ID = 1 HYD NO = 314.7 INFLOW ID = 2
PRINT HYD	ID = 1 CODE = 10
70 COMPUTE NM HYD	ID = 2 HYD NO = 313.1 DA = 0.0375 SQ MI
13A	PER A = 7.5 PER B = 15.0
	PER C = 7.5 PER D = 70.0 TP = 0.1667
	RAIN = -1
PRINT HYD	ID = 2 CODE = 10
COMPUTE NATIVE CURVE 75	RC = 1 VS NO = 1 CODE = -1
	SLOPE = 0.0234 DIAM = 4.0 n = 0.013
COMPUTE TRAVEL TIME	ID = 3 REACH NO = 7 NO VS = 1
	L = 500 SLP = 0.0234
ROUTE	ID = 3 HYD NO = 313.2 INFLOW ID = 2
80 PRINT HYD	ID = 3 CODE = 10
COMPUTE NM HYD	ID = 2 HYD NO = 313.3 DA = 0.0063
13B	PER A = 0 PER B = 10
	PER C = 10 PER D = 80 TP = 0.111111
	RAIN = -1
PRINT HYD 85	ID = 2 CODE = 10
ADD HYD	ID = 2 HYD NO = 313.4 IDS = 2 AND 3
PRINT HYD	ID = 2 CODE = 10
ADD HYD	ID = 1 HYD NO = 313.5 IDS = 1 AND 2
PRINT HYD	ID = 1 CODE = 10
90	

90 COMPUTE NM HYD
1 W
ID = 2 HYD NO = 301.1 DA = 0.0612
PER A = 6.0 PER B = 13
PER C = 6.0 PER D = 75
TP = 0.2111 RAIN = -1

PRINT HYD
ID = 2 CODE = 10

COMPUTE RATING CURVE
RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0095 DIAM = 3.0
n = 0.013

COMPUTE TRAVEL TIME
ID = 3 REACH_NO = 10 NO VS = 1
L = 850 SLOPE = 0.0095

100 ROUTE
ID = 3 HYD NO = 301.2 INFLOW ID = 2

PRINT HYD
ID = 3 CODE = 10

ADD HYD
ID = 1 HYD NO = 301.3 IDS = 3 & 1

PRINT HYD
ID = 1 CODE = 10

COMPUTE RATING CURVE
RC = 1 VS NO = 1 NO SEG = 4
MIN ELEV = 100 MAX ELEV = 106
LH SLP = 0.003 FP SLP = 0.003
N = 0.013 DIST = 32.0

DIST	ELEV	DIST	ELEV
0	106	12	100
20	100	32	106

110
~~100~~ COMPUTE TRAVEL TIME
ID = 2 REACH NO. = 2 NO VS = 1
L = 1130 SLP = 0.003

ROUTE
ID = 2 HYD NO = 301.4 INFLOW ID = 1

PRINT HYD
ID = 2 CODE = 10

COMPUTE NM HYD 115
12A
ID = 1 HYD NO = ~~301.5~~ 312.1 DA = 0.2063
PER A = 7.5 PER B = 15
PER C = 7.5 PER D = 70 TP = 0.3000
RAIN = -1

PRINT HYD
ID = 1 CODE = 10

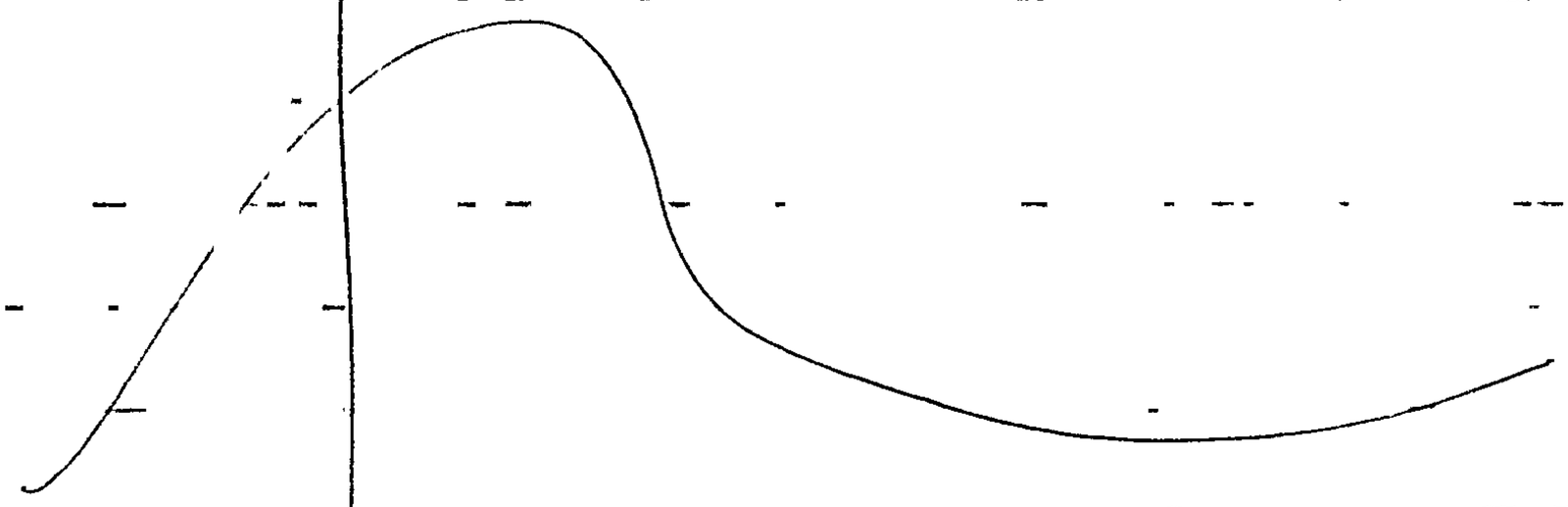
11° COMPUTE RATING CURVE	RC=1 VS NO=1 CODE=-1
	SLOPE = 0.0123 DIAM = 5.20
	n = 0.013
COMPUTE TRAVEL TIME	ID = 3 REACH NO = 16 NO VS = 1
	L = 350 SLOPE = 0.0123
12° ROUTE	ID = 3 HYD NO = 312.2 INFLOW ID = 1
PRINT HYD	ID = 3 CODE = 10
COMPUTE NM HYD 12B	ID = 1 HYD NO = 312.3 DA = 0.0191
	PER A = 0 PER B = 10
	PER C = 10 PER D = 80 TP = 0.111111
130	RAIN = -1
PRINT HYD	ID = 1 CODE = 10
ADD HYD	ID = 1 HYD NO = 312.4 IDS = 1 & 3
PRINT HYD	ID = 1 CODE = 10
ADD HYD	ID = 2 HYD NO = 312.5 IDS = 1 & 2
PRINT HYD 135	ID = 2 CODE = 10
COMPUTE RATING CURVE	RC = 1 VS NO = 1 NO SEG = 1
	MIN ELEV = 100 MAX ELEV = 106
	CH SLP = 0.003 FP SLP = 0.003
	N = 0.013 DIST = 39.0
140	DIST ELEV DIST ELEV
	0 106 12 100
	27 100 39 106
COMPUTE TRAVEL TIME	ID = 1 REACH NO = 1 NO VS = 1
	L = 550 SLP = 0.003
ROUTE 145	ID = 1 HYD NO = 312.6 INFLOW ID = 2
PRINT HYD 146	ID = 1 CODE = 10

```
147 COMPUTE NIY HYD
      2W
150
    PRINT HYD
    ADD HYD
    PRINT HYD
    PLOT HYD
160 FINISH
```

PLOT HYD

ID = 2 HYD NO = 302.0 LDA=0.0575.1
PER A = 7.5 PER B = 15
PER C = 7.5 PER D = 70 TP=0.111111
RAIN = -1
ID=2 CODE=10
ID = 1 HYD NO = 302.1 IDS=1 & 2
ID = 1 CODE=0
ID = 1 * IN COL 80

IDS 1 AND 3



City of Albuquerque

Sent to G.C.

May 17, 2000

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

RE: GRADING & DRAINAGE PLAN FOR JEFFERSON COMMONS ii - LOT 6, BUILDINGS B & C (F-17/D063) ENGINEERS STAMP DATED 5/4/00 SUBMITTED FOR BUILDING PERMIT APPROVAL & ROUGH GRADING PERMIT

Dear Mr. Weiss,

Based upon the information provided in your May 8, 2000, submittal, the project referred to above is approved for Building Permit and for Rough Grading Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

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

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

Sincerely,

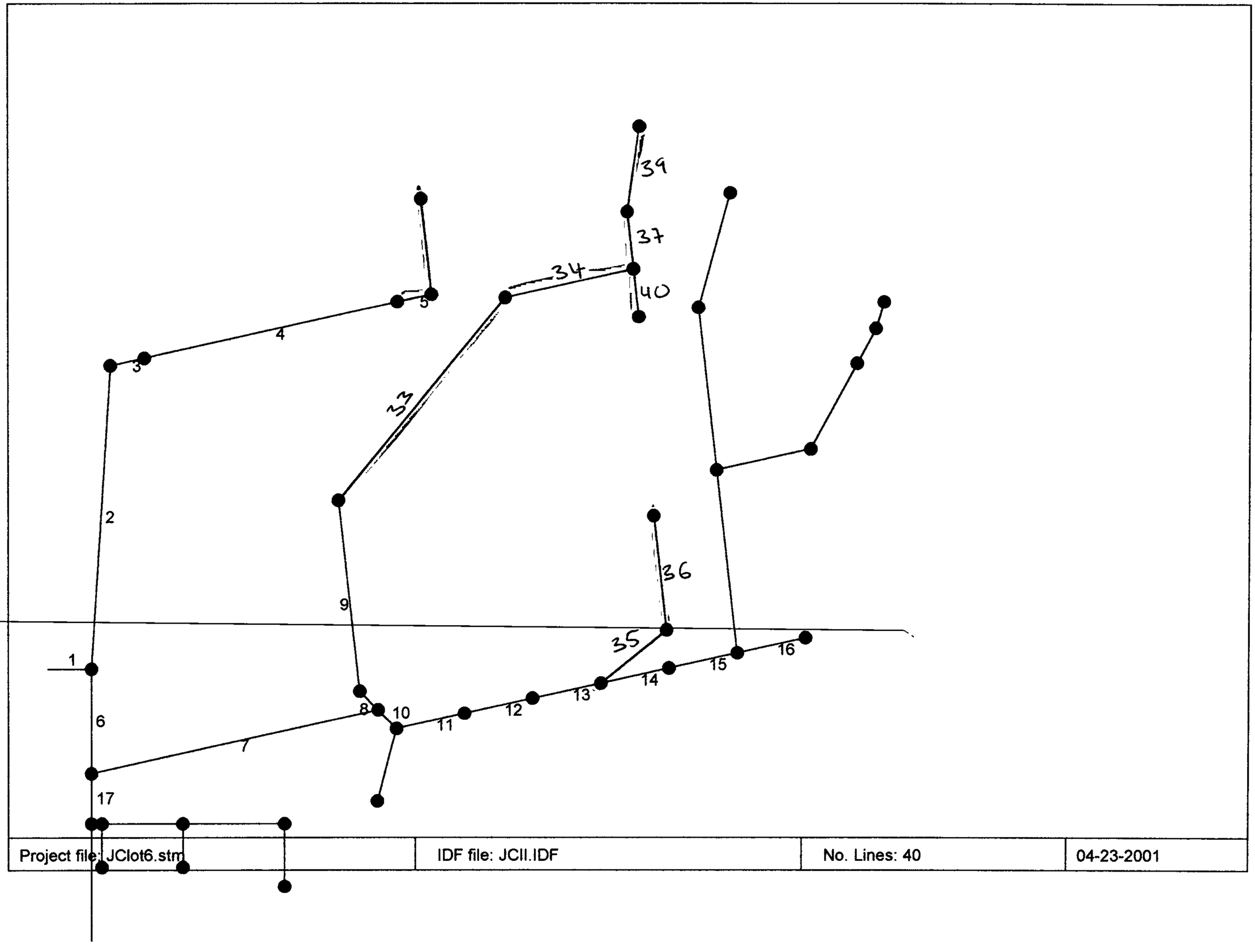
Stuart Reeder, P.E.

Stuart Reeder, P.E.
Hydrology Division

xc: Whitney Reierson
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

Hydraflow Plan View



Project file: JClot6.stm	IDF file: JCII.IDF	No. Lines: 40	04-23-2001

Hydraflow Summary Report

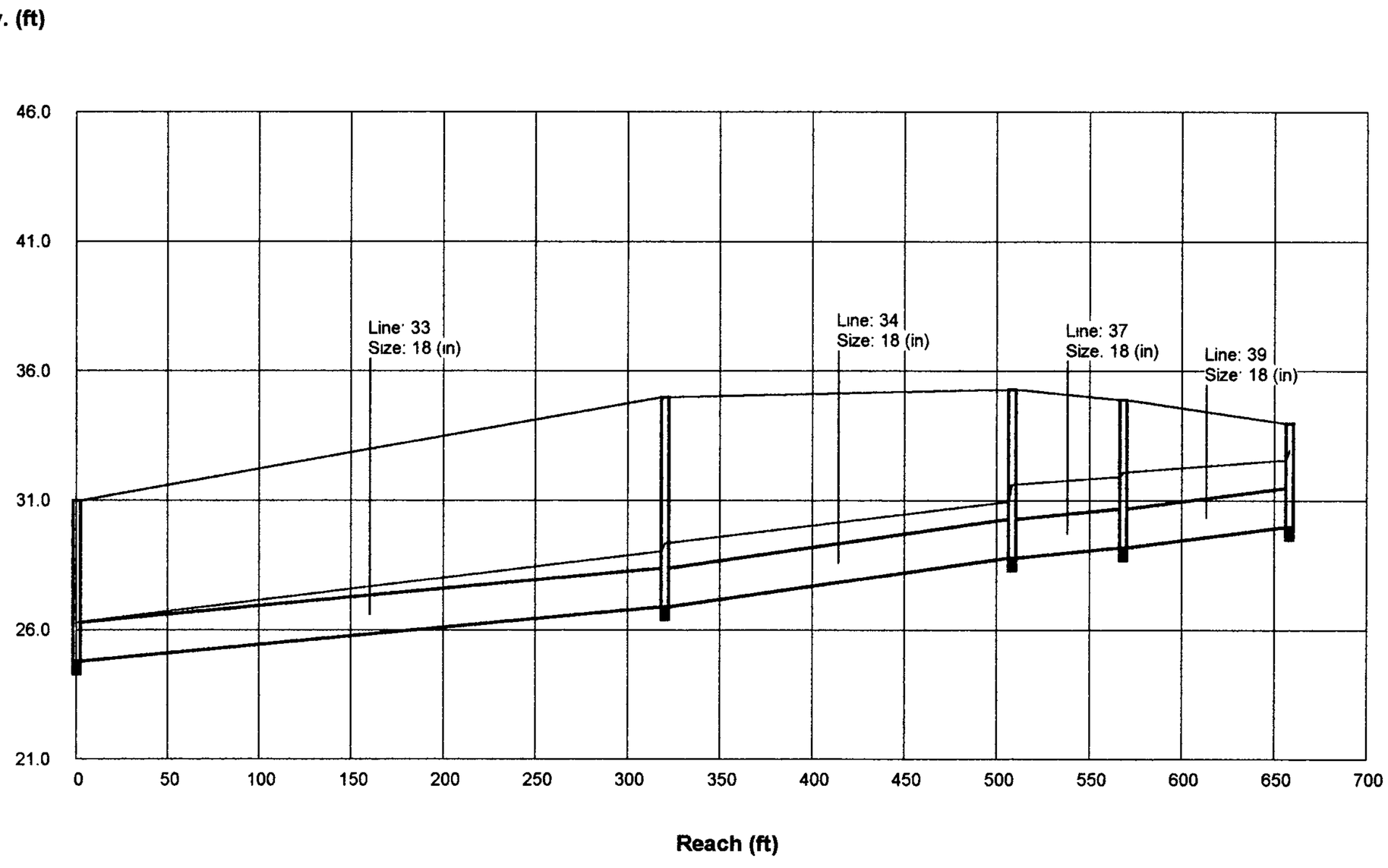
Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
33	Inlet 4A - MH	11.50	18 c	320.0	24.80	26.90	0.656	26.30*	29.05*	0 30	9
34	MH - Inlet 4A1	11.50	18 c	188.0	26.90	28.80	1.011	29.34*	30.96*	0 66	33
35	Inlet 4D - MH	5 10	18 c	110.0	28.50	29.20	0.636	30.56	30.70	0 11	13
36	MH - Inlet 4D1	5.10	18 c	120 0	29.20	30.00	0.667	30.81	30.94	0.30	35
37	Inlet 4A2 - 4A3	8.90	18 c	60 0	28.80	29.20	0.667	31 62*	31.93*	0 18	34
38	Inlet 2B2 - 2B3	6 00	18 c	100.0	26.25	26.75	0 500	28 17*	28 45*	0 18	5
39	North Inlet	8 90	18 c	90.0	29.20	30.00	0.889	32.10*	32.57*	0.39	37
40	Southn Inlet	2.60	18 c	50.0	28.80	30.50	3.400	31 62	31.62	0.05	34

Project File: JClot6.stm	I-D-F File. JCII.IDF	Total No. Lines: 40	Run Date: 04-23-2001

NOTES. c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition

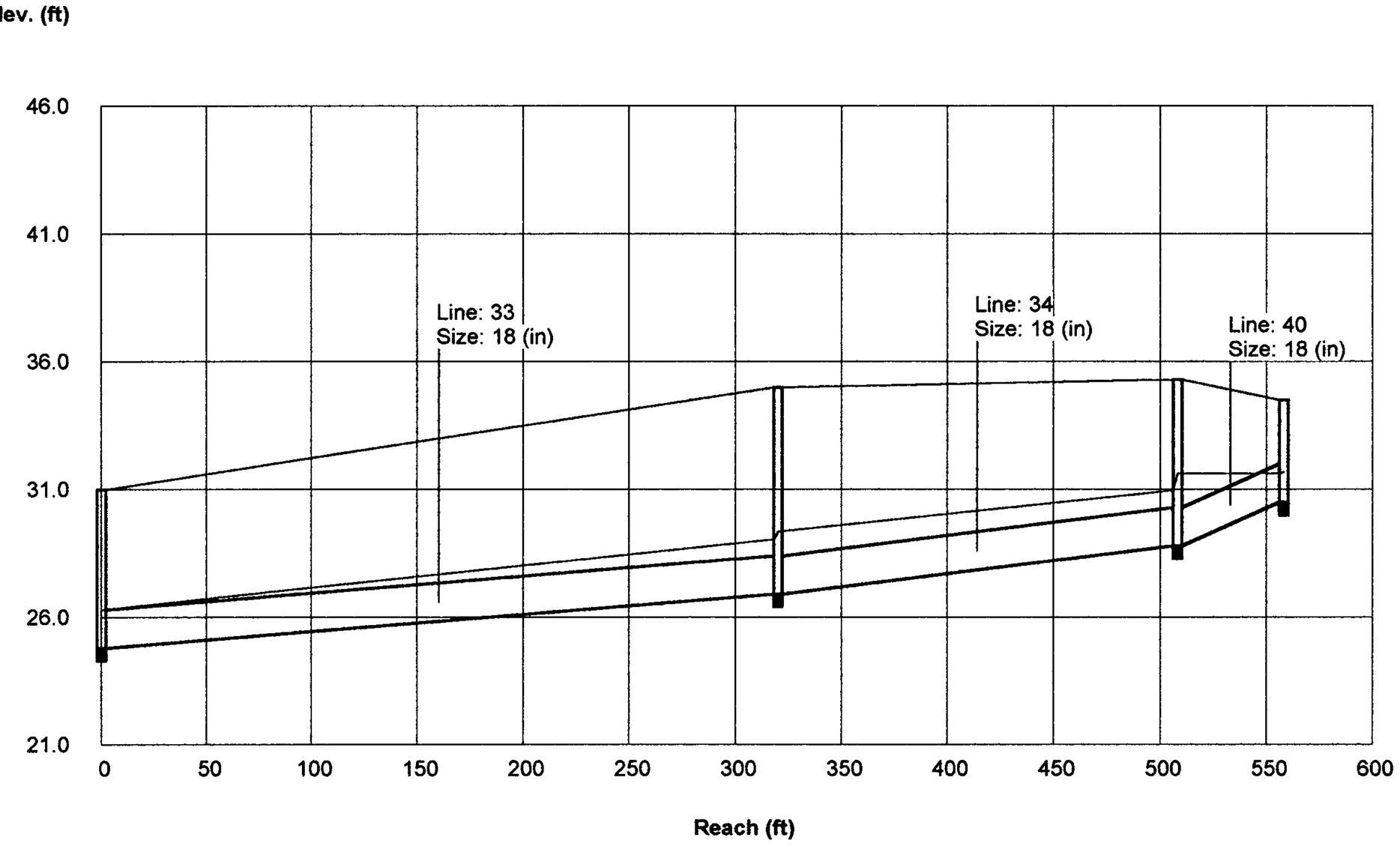
Storm Sewer Profile

Proj. file: JClot6.stm



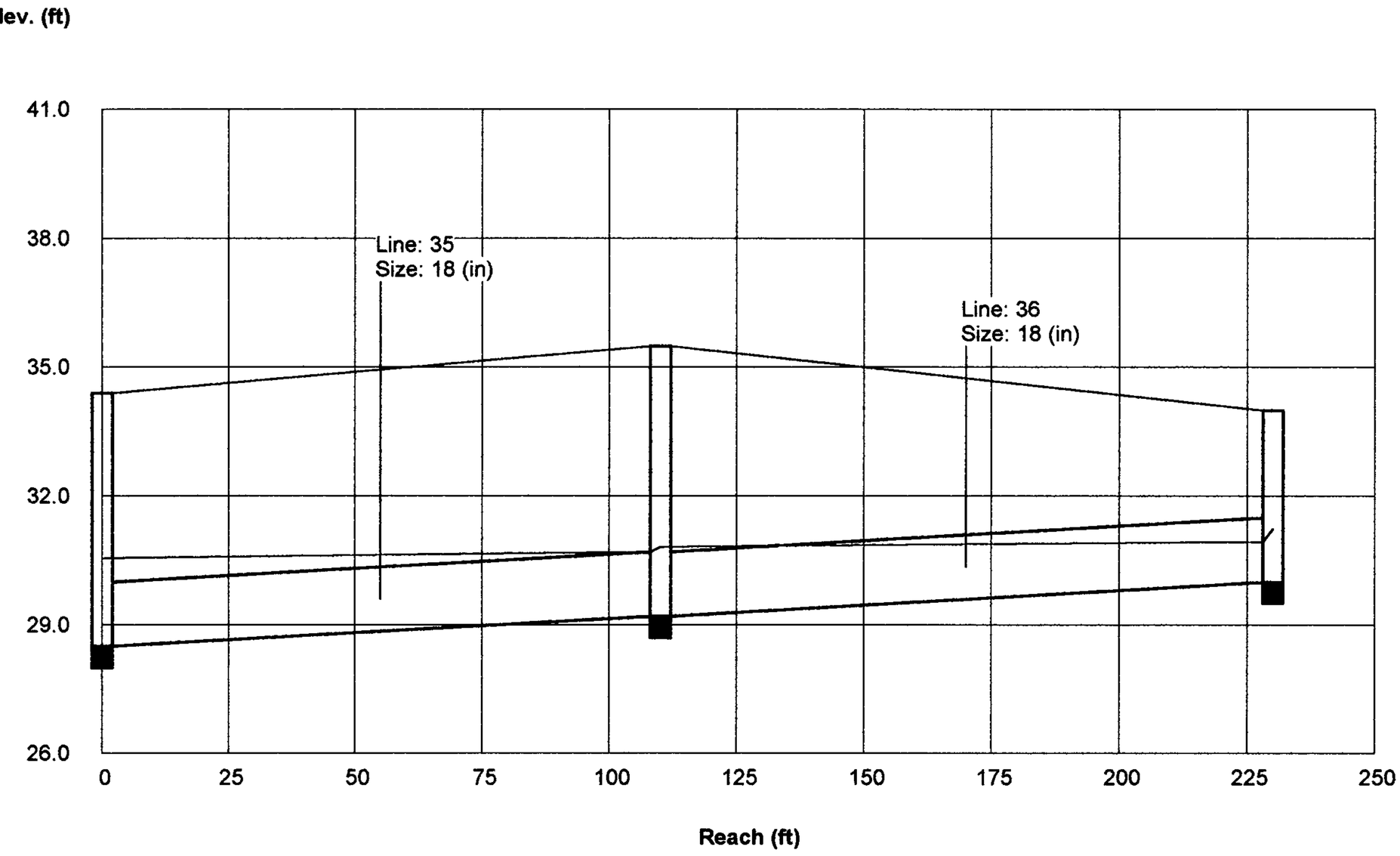
Storm Sewer Profile

Proj. file: JClot6.stm



Storm Sewer Profile

Proj. file: JClot6.stm



CITY OF
Albuquerque

October 5,1998

Chris Weiss
C.L. Weiss Engineering Inc.
P.O. Box 97
Sandia Park, New mexico 87110

RE: ENGINEER CERTIFICATION FOR JEFFERSON COMMOMNS II-LOT 5 (F17-D63)
CERTIFICATION STATEMENT DATED 9/10/98

Dear Mr. Weiss;

Based on the information provided on your September 10,1998 submittal, Engineer Certification for the above referenced site is acceptable.

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

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Associate Engineer

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

October 21, 1997

Christopher L. Weiss, P.E.
P.O. Box 97
Sandia Park, NM 87047

RE: LOT 5 JEFFERSON COMMONS PHASE 2 (F17-D63). DRAINAGE REPORT FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED OCTOBER 10, 1997.

Dear Mr. Weiss:

Based on the information provided on your October 7, 1997 submittal, the above referenced project is granted a Grading and Foundation Permit only. Prior to Building Permit, City Hydrology has the following comment:

1. You have defined the location of this site as Lot 5. Unless there are multiple lots, please use the term "unit" or "phase." If there are multiple lots, a re-plat and cross lot drainage easements will be required.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

City of Albuquerque

May 17, 2000

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

RE: GRADING & DRAINAGE PLAN FOR JEFFERSON COMMONS ii - LOT 6, BUILDINGS B & C (F-17/D063) ENGINEERS STAMP DATED 5/4/00 SUBMITTED FOR BUILDING PERMIT APPROVAL & ROUGH GRADING PERMIT

Dear Mr. Weiss,

Based upon the information provided in your May 8, 2000, submittal, the project referred to above is approved for Building Permit and for Rough Grading Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

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

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

Sincerely,

Stuart Reeder, P.E.

Stuart Reeder, P.E.
Hydrology Division

xc: Whitney Reierson
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

CITY OF
Albuquerque

February 24, 1998

Gary Bittner
Jeff Mortensen & Associates
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: HOMEGATE STUDIOS & SUITES AT JEFFERSON COMMONS - LOT 1 (F17-D63). CONCEPTUAL GRADING AND DRAINAGE PLAN FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED JANUARY 29, 1998.

Dear Mr. Bittner:

Based on the information provided on your January 30, 1998 submittal, the above referenced project is approved for Site Development Plan for Building Permit.

Will the proposed storm drain be installed prior to your request for Building Permit? If so, please indicate on your plan sheet. The private storm sewer must be installed prior to Certificate of Occupancy approval.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 12, 1998

Christopher L. Weiss, P.E.
P.O. Box 97
Sandia Park, NM 87047

5601 Office Blvd. NE

RE: LOT 5 JEFFERSON COMMONS PHASE 2 (F17-D63). DRAINAGE REPORT FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 12, 1997.

Dear Mr. Weiss:

Based on the information provided on your December 17, 1997 submittal, the above referenced project is approved for Building Permit.

An Engineer's Certification will be required prior to Certificate of Occupancy. Please indicate as-built information for the existing storm sewer on your certification.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

CITY OF
Albuquerque

Martin J. Chávez, Mayor

November 24, 1997

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

RE: MASTER PLAN FOR JEFFERSON COMMONS PHASE 2 (F17-D63). DRAINAGE REPORT FOR PRELIMINARY AND FINAL PLAT. ENGINEER'S STAMP DATED NOVEMBER 14, 1997.

Dear Mr. Weiss:

Based on the information provided on your November 17, 1997 submittal, the above referenced project is approved for Preliminary and Final Plat. Prior to DRB sign off, AMAFCA's concurrence will be required.

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

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

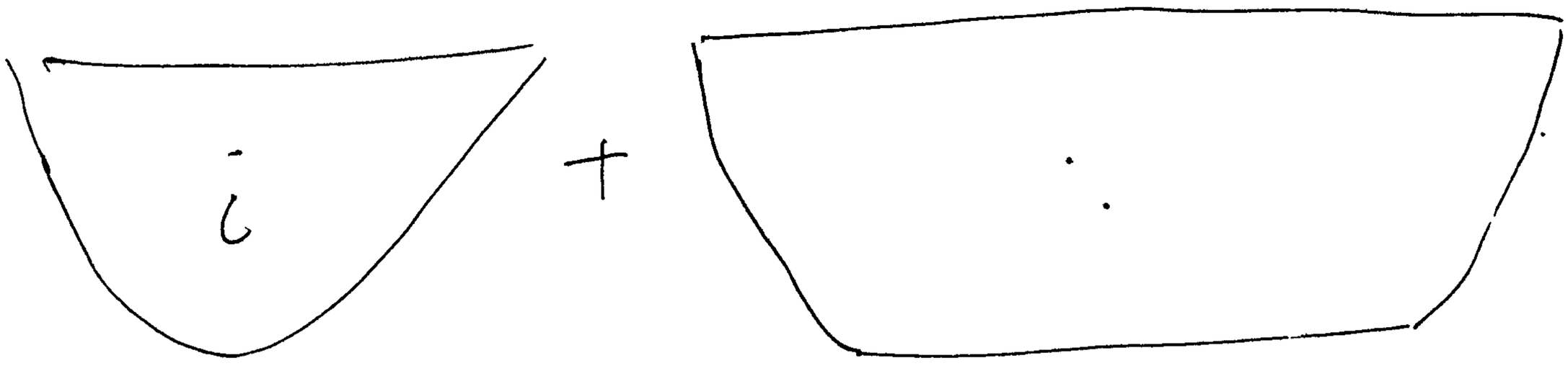
c: Andrew Garcia
File

.00 .67 1.34 2.01 2.68 3.35 4.02 4.69 5.36 6.02 6.69 7.36 8.03

TIME HOURS

FINISH

END TIME (HR:MIN:SEC) = 22:49:53



0.
.00
.67
1.35
2.02
2.70
3.37
4.05
4.72
5.40
6.07
6.75
7.42
8.10
TIME HOURS

PLOT HYD
IDS = 1 AND 3
FLOW RATE (CFS)
PLOT SYMBOLS: ID 1= --*--
ID 3= --+--
BOTH= --#--
618.
495.
371.
247.
124.

1.300	196.6	2.933	11.2	4.567	2.5	6.200	.1	7.833	.0
1.333	166.0	2.967	11.4	4.600	2.4	6.233	.1	7.867	.0
1.367	151.0	3.000	11.0	4.633	2.3	6.267	.1	7.900	.0
1.400	136.5	3.033	10.7	4.667	2.2	6.300	.1	7.933	.0
1.433	122.9	3.067	10.3	4.700	2.1	6.333	.1	7.967	.0
1.467	110.3	3.100	10.0	4.733	2.1	6.367	.1	8.000	.0
1.500	99.6	3.133	9.7	4.767	2.0	6.400	.1	8.033	.0
1.533	91.1	3.167	9.4	4.800	1.9	6.433	.1	8.067	.0
1.567	83.9	3.200	9.1	4.833	1.8	6.467	.1	8.100	.0
1.600	78.2	3.233	9.8	4.867	1.7	6.500	.1		

RUNOFF VOLUME = 1.63629 INCHES = 37.2950 ACRE-FEET
PEAK DISCHARGE RATE = 518.43 CFS AT .600 HOURS

Total

PLOT HYD ID = 1 *

FLOW RATE (CFS)

PRINT HYD ID = 1 CODE = 0

HYDROGRAPH FROM AREA 302.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.633	73.3	3.267	8.5	4.900	1.7	6.533	.1
.033	.0	1.667	68.7	3.300	8.3	4.933	1.6	6.567	.0
.067	.0	1.700	64.4	3.333	8.0	4.967	1.5	6.600	.0
.100	.0	1.733	60.1	3.367	7.8	5.000	1.4	6.633	.0
.133	.0	1.767	55.8	3.400	7.5	5.033	1.4	6.667	.0
.167	.0	1.800	52.2	3.433	7.3	5.067	1.3	6.700	.0
.200	.0	1.833	49.3	3.467	7.1	5.100	1.2	6.733	.0
.233	1.1	1.867	46.7	3.500	6.9	5.133	1.2	6.767	.0
.267	8.7	1.900	44.3	3.533	6.7	5.167	1.1	6.800	.0
.300	28.1	1.933	42.1	3.567	6.5	5.200	1.0	6.833	.0
.333	56.0	1.967	40.0	3.600	6.3	5.233	1.0	6.867	.0
.367	93.9	2.000	38.1	3.633	6.1	5.267	.9	6.900	.0
.400	155.0	2.033	36.2	3.667	5.9	5.300	.8	6.933	.0
.433	261.1	2.067	34.4	3.700	5.7	5.333	.8	6.967	.0
.467	393.3	2.100	32.7	3.733	5.6	5.367	.7	7.000	.0
.500	497.5	2.133	31.1	3.767	5.4	5.400	.7	7.033	.0
.533	561.5	2.167	29.7	3.800	5.2	5.433	.6	7.067	.0
.567	601.0	2.200	28.3	3.833	5.1	5.467	.6	7.100	.0
.600	618.4	2.233	27.0	3.867	4.9	5.500	.5	7.133	.0
.633	610.6	2.267	25.8	3.900	4.8	5.533	.5	7.167	.0
.667	585.7	2.300	24.6	3.933	4.7	5.567	.5	7.200	.0
.700	546.4	2.333	23.6	3.967	4.5	5.600	.4	7.233	.0
.733	506.9	2.367	22.6	4.000	4.4	5.633	.4	7.267	.0
.767	470.8	2.400	21.6	4.033	4.2	5.667	.4	7.300	.0
.800	439.7	2.433	20.8	4.067	4.1	5.700	.3	7.333	.0
.833	412.9	2.467	19.9	4.100	4.0	5.733	.3	7.367	.0
.867	390.4	2.500	19.2	4.133	3.9	5.767	.3	7.400	.0
.900	371.9	2.533	18.5	4.167	3.8	5.800	.2	7.433	.0
.933	356.5	2.567	17.8	4.200	3.6	5.833	.2	7.467	.0
.967	343.2	2.600	17.1	4.233	3.5	5.867	.2	7.500	.0
1.000	331.7	2.633	16.5	4.267	3.4	5.900	.2	7.533	.0
1.033	321.4	2.667	15.9	4.300	3.3	5.933	.2	7.567	.0
1.067	309.6	2.700	15.3	4.333	3.2	5.967	.1	7.600	.0
1.100	293.2	2.733	14.7	4.367	3.1	6.000	.1	7.633	.0
1.133	274.5	2.767	14.2	4.400	3.0	6.033	.1	7.667	.0
1.167	256.2	2.800	13.7	4.433	2.9	6.067	.1	7.700	.0
1.200	239.1	2.833	13.2	4.467	2.8	6.100	.1	7.733	.0
1.233	219.9	2.867	12.7	4.500	2.7	6.133	.1	7.767	.0
1.267	201.3	2.900	12.2	4.533	2.6	6.167	.1	7.800	.0

4.421	127.512	1735.83	.0112
4.737	139.611	1972.53	.0106
5.053	152.110	2224.96	.0104
5.368	165.007	2493.38	.0101
5.684	178.304	2778.04	.0098
6.000	191.999	3079.19	.0095

ROUTE ID = 1 HYD NO = 312.6 INFLOW ID = 2

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 312.60

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	65.6	3.333	7.5	5.000	1.4	6.667	.0
.333	8.7	2.000	36.6	3.667	5.5	5.333	.8	7.000	.0
.667	520.2	2.333	22.4	4.000	4.1	5.667	.4	7.333	.0
1.000	302.4	2.667	15.0	4.333	3.0	6.000	.1	7.667	.0
1.333	161.6	3.000	10.3	4.667	2.1	6.333	.1	8.000	.0

RUNOFF VOLUME = 1.63960 INCHES = 32.3462 ACRE-FEET
PEAK DISCHARGE RATE = 538.03 CFS AT .633 HOURS

12, 13, 14, 19, 1W Routed

COMPUTE NM HYD ID = 2 HYD NO = 302.0 DA = 0.0575 SQ MI 2W
PER A = 7.5 PER B = 15.0
PER C = 7.5 PER D = 70.0 T_p = 0.111111
RAIN = -1

K = .049143HR TP = .111111HR K/TP RATIO = .442236 SHAPE CONSTANT, N = 9.359832
UNIT PEAK = 226.04 CFS UNIT VOLUME = 1.000 B = 624.00
AREA = .040250 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .099924HR TP = .111111HR K/TP RATIO = .899318 SHAPE CONSTANT, N = 3.941025
UNIT PEAK = 54.527 CFS UNIT VOLUME = 1.001 B = 351.22
AREA = .017250 SQ MI IA = .32250 INCHES INF = 1.62750 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 302.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	4.3	2.667	.9	4.000	.3	5.333	.0
.333	47.4	1.667	2.1	3.000	.7	4.333	.2	5.667	.0
.667	63.7	2.000	1.5	3.333	.6	4.667	.1	6.000	.0
1.000	29.4	2.333	1.1	3.667	.4	5.000	.1		

RUNOFF VOLUME = 1.61372 INCHES = 4.9487 ACRE-FEET
PEAK DISCHARGE RATE = 160.66 CFS AT .467 HOURS

ADD HYD ID = 1 HYD NO = 302.1 IDS = 1 AND 2

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.667	68.3	3.333	7.1	5.000	1.3	6.667	.0
.333	20.1	2.000	35.0	3.667	5.2	5.333	.7	7.000	.0
.667	511.2	2.333	21.2	4.000	3.9	5.667	.3	7.333	.0
1.000	298.7	2.667	14.0	4.333	2.8	6.000	.1	7.667	.0
1.333	155.2	3.000	9.8	4.667	2.0	6.333	.1	8.000	.0

RUNOFF VOLUME = 1.63980 INCHES = 32.3463 ACRE-FEET
PEAK DISCHARGE RATE = 539.45 CFS AT .600 HOURS

12, 13, 14, 19 + W

COMPUTE RATING CURVE RC = 1 VS NO = 1 NO SEG = 1
MIN ELEV = 100 MAX ELEV = 106
CH SLP = 0.003 FP SLP = 0.003
n = 0.013 DIST = 39.0

DIST	ELEV	DIST	ELEV
0	106	12	100
32	100	44	106

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.32	6.5	18.5
100.63	13.4	59.0
100.95	20.7	117.1
101.26	28.5	190.9
101.58	36.6	279.3
101.89	45.1	383.3
102.21	54.0	501.3
102.53	63.3	633.7
102.84	73.0	780.5
103.16	83.1	941.9
103.47	93.6	1117.8
103.79	104.5	1308.7
104.11	115.8	1514.6
104.42	127.5	1735.8
104.74	139.6	1972.5
105.05	152.1	2225.0
105.37	165.0	2495.4
105.68	178.3	2778.0
106.00	192.0	3079.2

COMPUTE TRAVEL TIME ID = 1 REACH NO = 1 NO VS = 1
L = 550 SLP = 0.0030

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.316	6.515	18.45	.0527
.632	13.429	59.04	.0348
.947	20.742	117.06	.0271
1.263	29.454	190.91	.0228
1.579	36.565	279.80	.0200
1.895	45.075	383.32	.0180
2.211	53.983	501.29	.0165
2.526	63.291	633.66	.0153
2.842	72.997	780.47	.0143
3.158	83.102	941.81	.0135
3.474	93.606	1117.83	.0128
3.789	104.509	1308.71	.0122

.333	.6	2.000	24.4	3.667	3.1	5.333	.4	7.000	.0
.667	119.2	2.333	14.2	4.000	2.2	5.667	.2	7.333	.0
1.000	146.6	2.667	9.1	4.333	1.6	6.000	.1	7.667	.0
1.333	108.2	3.000	6.1	4.667	1.1	6.333	.1	8.000	.0

RUNOFF VOLUME = 1.61372 INCHES = 13.3193 ACRE-FEET
PEAK DISCHARGE RATE = 147.69 CFS AT 1.067 HOURS

12A split 324.53

12B

COMPUTE NM HYD ID = 1 HYD NO = 312.3 DA = 0.0141 SQ MI
PER A = 0 PER B = 10.0
PER C = 10.0 PER D = 80.0 Tp = 0.111111
RAIN = -1

K = .048202HR TP = .111111HR K/TP RATIO = .433816 SHAPE CONSTANT, N = 5.608647
UNIT PEAK = 64.359 CFS UNIT VOLUME = 1.000 B = 633.95
AREA = .011280 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .087507HR TP = .111111HR K/TP RATIO = .787562 SHAPE CONSTANT, N = 4.557642
UNIT PEAK = 5.9178 CFS UNIT VOLUME = .9996 B = 390.77
AREA = .002820 SQ MI IA = .28500 INCHES INF = 1.39000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 1 CODE =10

HYDROGRAPH FROM AREA 312.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.1	2.667	.3	4.000	.1	5.333	.0
.333	13.2	1.667	.6	3.000	.2	4.333	.1	5.667	.0
.667	17.1	2.000	.4	3.333	.2	4.667	.0	6.000	.0
1.000	8.0	2.333	.3	3.667	.1	5.000	.0		

RUNOFF VOLUME = 1.76796 INCHES = 1.3295 ACRE-FEET
PEAK DISCHARGE RATE = 42.67 CFS AT .467 HOURS

12B

ADD HYD ID = 1 HYD NO = 312.4 IDS = 1 AND 3
PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 312.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	45.6	3.333	4.4	5.000	.9	6.667	.0
.333	13.8	2.000	24.8	3.667	3.2	5.333	.4	7.000	.0
.667	136.3	2.333	14.5	4.000	2.3	5.667	.2	7.333	.0
1.000	154.7	2.667	9.4	4.333	1.7	6.000	.1	7.667	.0
1.333	109.3	3.000	6.3	4.667	1.2	6.333	.1	8.000	.0

RUNOFF VOLUME = 1.62660 INCHES = 14.6488 ACRE-FEET
PEAK DISCHARGE RATE = 154.86 CFS AT 1.033 HOURS

12A + 12B

ADD HYD ID = 2 HYD NO = 312.5 IDS = 1 AND 2
PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 312.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW

	234.0	4.012
	264.0	6.078

COMPUTE RATING CURVE RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0123 DIAM = 5.2
n = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.27	.4	1.7
.54	1.2	7.3
.81	2.1	17.0
1.08	3.2	30.5
1.35	4.4	47.7
1.63	5.7	68.0
1.90	7.0	91.1
2.17	8.4	116.5
2.44	9.9	143.6
2.71	11.2	171.9
2.98	12.6	200.7
3.25	14.0	229.3
3.52	15.3	257.0
3.79	16.6	282.9
4.06	17.8	306.2
4.34	18.9	325.5
4.61	19.9	339.3
4.88	20.7	345.0
5.20	21.2	345.0

COMPUTE TRAVEL TIME ID = 3 REACH NO = 6 NO VS = 1
L = 350 SLP = 0.0123

TRAVEL TIME TABLE
REACH= 6.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.271	.422	1.68	.0244
.542	1.174	7.30	.0154
.813	2.121	16.98	.0121
1.084	3.208	30.53	.0102
1.355	4.401	47.67	.0090
1.626	5.674	68.05	.0081
1.897	7.007	91.13	.0075
2.168	8.382	116.51	.0070
2.439	9.791	143.63	.0066
2.710	11.185	171.90	.0063
2.981	12.591	200.68	.0061
3.252	13.972	229.30	.0059
3.523	15.314	257.00	.0058
3.794	16.600	282.94	.0057
4.065	17.810	306.16	.0057
4.336	18.920	325.47	.0057
4.607	19.896	339.29	.0057
4.878	20.691	344.97	.0058
5.200	21.237	344.97	.0060

ROUTE ID = 3 HYD NO = 312.2 INFLOW ID = 5
PRINT HYD ID = 3 CODE = 10

HYDROGRAPH FROM AREA 312.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0	1.667	1.1	3.333	4.3	5.000	0	1.667	0

4.737	101.717	1343.92	.0238
5.053	111.589	1527.47	.0230
5.368	122.060	1724.49	.0222
5.684	132.530	1935.20	.0215
6.000	143.999	2159.93	.0209

ROUTE ID = 2 HYD NO = 301.4 INFLOW ID = 1
PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 301.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	17.7	3.333	2.4	5.000	.5	6.667	.0
.333	6.2	2.000	10.2	3.667	2.0	5.333	.2		
.667	374.9	2.333	6.6	4.000	1.5	5.667	.1		
1.000	144.0	2.667	4.6	4.333	1.1	6.000	.0		
1.333	45.9	3.000	3.4	4.667	.8	6.333	.0		

RUNOFF VOLUME = 1.65070 INCHES = 17.6975 ACRE-FEET
PEAK DISCHARGE RATE = 415.72 CFS AT .600 HOURS

Routed 13, 14, 19, 1W

COMPUTE NM HYD ID = 1 HYD NO = 312.1 DA = 0.2063 SQ MI 12A
PER A = 7.5 PER B = 15.0
PER C = 7.5 PER D = 70.0 TP = 0.3
RAIN = -1

K = .167512HR TP = .300000HR K/TP RATIO = .558372 SHAPE CONSTANT, N = 6.889842
UNIT PEAK = 248.39 CFS UNIT VOLUME = 1.000 B = 516.01
AREA = .144410 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .250272HR TP = .300000HR K/TP RATIO = .834244 SHAPE CONSTANT, N = 4.274489
UNIT PEAK = 76.965 CFS UNIT VOLUME = .9998 B = 273.07
AREA = .061890 SQ MI IA = .32259 INCHES INF = 1.62750 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 312.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	39.0	3.333	3.6	5.000	.5	6.667	.0
.333	7.2	2.000	17.5	3.667	2.6	5.333	.3	7.000	.0
.667	324.9	2.333	11.1	4.000	1.9	5.667	.1	7.333	.0
1.000	170.7	2.667	7.4	4.333	1.3	6.000	.1	7.667	.0
1.333	70.8	3.000	5.1	4.667	.9	6.333	.0		

RUNOFF VOLUME = 1.61372 INCHES = 17.7551 ACRE-FEET
PEAK DISCHARGE RATE = 324.92 CFS AT .667 HOURS 12A

DIVIDE HYD ID=1 O=150 ID I=4 HYD I=12 ID II=3 HYD II=13
ROUTE RESERVOIR ID = 5 HYD NO = 15 INFLOW ID = 4

OUTFLOW (CFS)	STORAGE(AC FT)
0	0
25.5	0.309
57.0	0.752
105.0	1.237
150.0	1.799
180.0	2.447
210.0	3.185

ID 3 Lost

.000	.0	1.667	15.2	3.333	2.4	5.000	.4	6.667	.0
.333	27.5	2.000	8.6	3.667	1.3	5.333	.2		
.667	351.1	2.333	5.7	4.000	1.4	5.667	.0		
1.000	135.5	2.667	4.1	4.333	1.0	6.000	.0		
1.333	36.5	3.000	3.1	4.667	.7	6.333	.0		

RUNOFF VOLUME = 1.65089 INCHES = 17.6773 ACRE-FEET
PEAK DISCHARGE RATE = 423.66 CFS AT .567 HOURS

13, 14, 19, 1W

COMPUTE RATING CURVE RC = 1 VS NO = 1 NO SEG = 1
MIN ELEV = 100 MAX ELEV = 106
CH SLP = 0.003 FP SLP = 0.003
n = 0.013 DIST = 32.0

DIST	ELEV	DIST	ELEV
0	106	12	100
24	100	36	106

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.32	4.0	11.1
100.63	8.4	35.8
100.95	13.2	71.7
101.26	18.3	117.9
101.58	23.9	174.4
101.89	29.9	241.2
102.21	36.3	318.4
102.53	43.1	406.3
102.84	50.3	505.2
103.16	57.9	615.2
103.47	65.8	736.7
103.79	74.2	870.0
104.11	83.0	1015.4
104.42	92.1	1173.2
104.74	101.7	1343.8
105.05	111.7	1527.5
105.37	122.1	1724.5
105.69	132.8	1935.2
106.00	144.0	2159.9

COMPUTE TRAVEL TIME ID = 2 REACH NO = 2 NO VS = 1
L=1130 SLP = 0.0030

TRAVEL TIME TABLE
REACH= 2.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.316	3.989	11.13	.1125
.632	8.377	35.85	.0734
.947	13.163	71.66	.0577
1.263	18.349	117.90	.0489
1.579	23.932	174.40	.0431
1.895	29.917	241.19	.0389
2.211	36.299	318.43	.0358
2.526	43.080	406.34	.0333
2.842	50.260	505.16	.0312
3.158	57.839	615.17	.0295
3.474	65.817	736.68	.0280
3.789	74.194	869.99	.0268
4.105	82.969	1015.40	.0256

1.25	2.8	25.2
1.41	3.3	29.1
1.56	3.7	34.8
1.72	4.2	40.7
1.88	4.7	46.5
2.03	5.1	52.1
2.19	5.5	57.4
2.35	5.9	62.1
2.50	6.3	66.0
2.66	6.6	68.8
2.81	6.9	69.9
3.00	7.1	69.9

COMPUTE TRAVEL TIME ID = 4 REACH NO = 10 NO VS = 1
L = 850 SLP = 0.0095

TRAVEL TIME TABLE

REACH= 10.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.156	.140	.45	.0734
.313	.391	1.96	.0470
.469	.706	4.56	.0365
.625	1.068	8.21	.0307
.782	1.465	12.81	.0270
.938	1.889	18.28	.0244
1.094	2.332	24.49	.0225
1.251	2.790	31.32	.0210
1.407	3.255	38.60	.0199
1.563	3.724	46.20	.0190
1.720	4.191	53.94	.0183
1.876	4.650	61.63	.0178
2.032	5.097	69.07	.0174
2.189	5.525	76.05	.0172
2.345	5.928	82.29	.0170
2.501	6.297	87.48	.0170
2.658	6.622	91.19	.0171
2.814	6.887	92.72	.0175
3.000	7.069	92.72	.0180

ROUTE ID = 3 HYD NO = 301.2 INFLOW ID = 4
TRAVEL TIME TABLE EXCEEDED
PRINT HYD ID = 3 CODE = 10

HYDROGRAPH FROM AREA 301.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	5.8	3.333	.9	5.000	.1	6.667	.0
.333	3.5	2.000	3.2	3.667	.7	5.333	.1		
.667	107.1	2.333	2.1	4.000	.5	5.667	.0		
1.000	48.4	2.667	1.5	4.333	.4	6.000	.0		
1.333	14.1	3.000	1.1	4.667	.2	6.333	.0		

RUNOFF VOLUME = 1.57972 INCHES = 6.0201 ACRE-FEET
PEAK DISCHARGE RATE = 145.53 CFS AT .600 HOURS

Rev'd W

ADD HYD ID = 1 HYD NO 301.3 IDS = 3 AND 2
PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 301.30

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS

ADD HYD ID = 2 HYD NO = 313.5 IDS = 1 AND 2
PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 313.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	22.4	2.667	2.6	4.000	.9	5.333	.1
.333	23.9	1.667	9.4	3.000	2.0	4.333	.7	5.667	.0
.667	224.1	2.000	5.4	3.333	1.6	4.667	.4	6.000	.0
1.000	87.2	2.333	3.6	3.667	1.2	5.000	.3	6.333	.0

RUNOFF VOLUME = 1.63642 INCHES = 11.6774 ACRE-FEET
PEAK DISCHARGE RATE = 283.18 CFS AT .567 HOURS

13 A/B + 14 A/B + 19 A/B ✓

COMPUTE NM HYD ID = 4 HYD NO = 301.1 DA = 0.0572 SQ MI 1W
PER A = 6.0 PER B = 13.0
PER C = 6.0 PER D = 75.0 Tp = 0.2111
RAIN = -1

K = .094999HR TP = .211100HR K/TP RATIO = .450018 SHAPE CONSTANT, N = 5.143170
UNIT PEAK = 146.89 CFS UNIT VOLUME = .9999 B = 615.21
AREA = .050400 SQ MI IA = .19000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .188846HR TP = .211100HR K/TP RATIO = .894583 SHAPE CONSTANT, N = 3.963230
UNIT PEAK = 28.070 CFS UNIT VOLUME = .9996 B = 352.71
AREA = .016800 SQ MI IA = .32240 INCHES INF = 1.62760 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 4 CODE =10

HYDROGRAPH FROM AREA 301.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	13.0	2.667	1.4	4.000	.5	5.333	.1
.333	8.7	1.667	5.3	3.000	1.1	4.333	.3	5.667	.0
.667	119.2	2.000	3.1	3.333	.9	4.667	.2	6.000	.0
1.000	47.1	2.333	2.0	3.667	.6	5.000	.1	6.333	.0

RUNOFF VOLUME = 1.67971 INCHES = 6.0201 ACRE-FEET
PEAK DISCHARGE RATE = 146.39 CFS AT .567 HOURS 1W

COMPUTE RATING CURVE RC = 4 VS NO = 1 CODE = -1
SLOPE = 0.0095 DIAM = 3.0
n = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.16	.1	.3
.31	.4	1.5
.47	.7	3.4
.63	1.1	6.2
.78	1.5	9.7
.94	1.9	13.8
[illegible]	[illegible]	[illegible]

	3.000	7.069	92.72	.0106

ROUTE ID = 4 HYD NO = 313.2 INFLOW ID = 3
PRINT HYD ID = 4 CODE = 10

HYDROGRAPH FROM AREA 313.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	5.0	2.667	.7	4.000	.2	5.333	.0
.333	7.2	1.667	2.2	3.000	.3	4.333	.2	5.667	.0
.667	56.1	2.000	1.3	3.333	.4	4.667	.1	6.000	.0
1.000	22.8	2.333	.9	3.667	.3	5.000	.1	6.333	.0

RUNOFF VOLUME = 1.61373 INCHES = 3.2274 ACRE-FEET
PEAK DISCHARGE RATE = 87.45 CFS AT .533 HOURS

Routed 13A

COMPUTE NM HYD ID = 1 HYD NO = 313.3 DA = 0.0063 SQ MI 13B
PER A = 0 PER B = 10.0
PER C = 10.0 PER D = 80.0 Tp = 0.111111
RAIN = -1

K = .049202HR TP = .111111HR K/TP RATIO = .433516 SHAPE CONSTANT, N = 9.608647
UNIT PEAK = 28.756 CFS UNIT VOLUME = 1.000 B = 633.95
AREA = .005040 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .087567HR TP = .111111HR K/TP RATIO = .787562 SHAPE CONSTANT, N = 4.557642
UNIT PEAK = 4.4314 CFS UNIT VOLUME = .9979 B = 390.77
AREA = .001260 SQ MI IA = .28500 INCHES INF = 1.39000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 313.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.5	2.667	.1	4.000	.0	5.333	.0
.333	5.9	1.667	.2	3.000	.1	4.333	.0	5.667	.0
.667	7.6	2.000	.2	3.333	.1	4.667	.0	6.000	.0
1.000	3.6	2.333	.1	3.667	.1	5.000	.0		

RUNOFF VOLUME = 1.76796 INCHES = .5940 ACRE-FEET
PEAK DISCHARGE RATE = 19.07 CFS AT .467 HOURS 13B

ADD HYD ID = 1 HYD NO = 313.4 IDS = 1 AND 4
PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 313.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	5.5	2.667	.8	4.000	.3	5.333	.0
.333	13.1	1.667	2.4	3.000	.5	4.333	.2	5.667	.0
.667	63.8	2.000	1.5	3.333	.5	4.667	.1	6.000	.0
1.000	26.3	2.333	1.0	3.667	.4	5.000	.1	6.333	.0

RUNOFF VOLUME = 1.63570 INCHES = 3.8214 ACRE-FEET
PEAK DISCHARGE RATE = 105.23 CFS AT .533 HOURS 13A + 13B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	4.7	2.667	.7	4.000	.2	5.333	.0
.333	11.2	1.667	2.1	3.000	.5	4.333	.2	5.667	.0
.667	53.9	2.000	1.2	3.333	.4	4.667	.1	6.000	.0
1.000	22.4	2.333	.9	3.667	.3	5.000	.1		

RUN-OFF VOLUME = 1.61372 INCHES = 3.2274 ACRE-FEET
PEAK DISCHARGE RATE = 90.52 CFS AT .533 HOURS

13A

COMPUTE RATING CURVE RC = 4 VS NO = 1 CODE = -1
SLOPE = 0.0234 DIAM = 4.0 n = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	1.2
.42	.7	5.0
.63	1.3	11.6
.83	1.9	20.9
1.04	2.6	32.7
1.25	3.4	46.6
1.46	4.1	62.4
1.67	5.0	79.2
1.88	5.8	98.4
2.08	6.6	117.8
2.29	7.5	137.5
2.50	8.3	157.1
2.71	9.1	176.1
2.92	9.8	193.9
3.13	10.5	209.8
3.34	11.2	223.0
3.54	11.8	232.5
3.75	12.2	236.4
4.00	12.6	236.4

COMPUTE TRAVEL TIME ID = 4 REACH NO = 7 NO VS = 1
L = EOC SLP = 0.0234

TRAVEL TIME TABLE
REACH= 7.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.156	.140	.45	.0432
.313	.391	1.96	.0277
.469	.706	4.56	.0215
.625	1.068	8.21	.0181
.782	1.465	12.81	.0159
.938	1.889	18.26	.0143
1.094	2.332	24.47	.0132
1.251	2.790	31.32	.0124
1.407	3.255	38.60	.0117
1.563	3.724	46.20	.0112
1.720	4.191	53.94	.0108
1.876	4.650	61.63	.0105
2.032	5.097	69.07	.0102
2.189	5.525	76.05	.0101
2.345	5.928	82.29	.0100
2.501	6.297	87.48	.0100
2.656	6.622	91.17	.0101

COMPUTE TRAVEL TIME ID = 2 REACH NO = 4 NO VS = 1
L = 600 SLP = 0.0167

TRAVEL TIME TABLE

REACH= 4.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.156	.140	.45	.0518
.313	.391	1.96	.0332
.469	.706	4.56	.0258
.625	1.068	8.21	.0217
.782	1.465	12.81	.0191
.938	1.889	18.28	.0172
1.094	2.332	24.49	.0159
1.251	2.790	31.32	.0148
1.407	3.255	38.69	.0141
1.563	3.724	46.20	.0134
1.720	4.191	53.94	.0127
1.876	4.650	61.63	.0126
2.032	5.097	69.07	.0123
2.189	5.525	76.05	.0121
2.345	5.928	82.29	.0120
2.501	6.297	87.48	.0120
2.658	6.622	91.17	.0121
2.814	6.887	92.72	.0124
3.000	7.069	92.72	.0127

ROUTE ID = 2 HYD NO = 314.6 INFLOW ID = 1
TRAVEL TIME TABLE EXCEEDED
PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 314.60

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	16.9	2.667	1.9	4.000	.6	5.333	.1
.333	10.8	1.667	7.0	3.000	1.4	4.333	.5	5.667	.0
.667	160.2	2.000	4.0	3.333	1.1	4.667	.3	6.000	.0
1.000	60.8	2.333	2.6	3.667	.8	5.000	.2	6.333	.0

RUNOFF VOLUME = 1.53668 INCHES = 7.8560 ACRE-FEET
PEAK DISCHARGE RATE = 184.55 CFS AT .600 HOURS

14A/B + 19A/B Routed

COMPUTE NM HYD ID = 3 HYD NO = 313.1 DA = 0.0375 SQ MI 13A
PER A = 7.5 PER B = 15.0
PER C = 7.5 PER D = 70.0 Tp = 0.1667
RAIN = -1

K = .072317HR TP = .166700HR K/TP RATIO = .433915 SHAPE CONSTANT, N = 9.608647
UNIT PEAK = 79.827 CFS UNIT VOLUME = .9993 B = 633.95
AREA = .026250 SQ MI IA = .10000 INCHES INF = .04900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .150709HR TP = .166700HR K/TP RATIO = .904065 SHAPE CONSTANT, N = 3.919050
UNIT PEAK = 23.602 CFS UNIT VOLUME = .9995 B = 349.74
AREA = .011250 SQ MI IA = .32250 INCHES INF = 1.62750 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 3 CODE = 10

HYDROGRAPH FROM AREA 313.10

.333	11.4	1.667	5.5	3.000	1.1	4.333	.3	5.667	.0
.400	44.3	1.733	4.8	3.067	1.0	4.400	.3	5.733	.0
.467	96.3	1.800	4.2	3.133	1.0	4.467	.3	5.800	.0
.533	137.9	1.867	3.9	3.200	.9	4.533	.3	5.867	.0
.600	146.0	1.933	3.4	3.267	.9	4.600	.2	5.933	.0
.667	122.2	2.000	3.1	3.333	.8	4.667	.2	6.000	.0
.733	95.4	2.067	2.8	3.400	.8	4.733	.2	6.067	.0
.800	74.6	2.133	2.6	3.467	.7	4.800	.2	6.133	.0
.867	62.0	2.200	2.4	3.533	.7	4.867	.2	6.200	.0
.933	53.7	2.267	2.2	3.600	.7	4.933	.1	6.267	.0
1.000	47.2	2.333	2.0	3.667	.6	5.000	.1	6.333	.0
1.067	41.6	2.400	1.9	3.733	.6	5.067	.1	6.400	.0
1.133	37.4	2.467	1.7	3.800	.5	5.133	.1	6.467	.0
1.200	33.5	2.533	1.6	3.867	.5	5.200	.1	6.533	.0
1.267	17.6	2.600	1.5	3.933	.5	5.267	.1		

RUNOFF VOLUME = 1.67894 INCHES = 6.1767 ACRE-FEET
PEAK DISCHARGE RATE = 146.81 CFS AT .567 HOURS

14A + 14B

ADD HYD ID = 1 HYD NO 314.5 IDS = 1 AND 2

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 314.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.233	16.0	2.667	1.6	4.000	.6	5.333	.1
.333	15.3	1.667	6.8	3.000	1.4	4.333	.4	5.667	.0
.667	153.5	2.000	3.9	3.333	1.1	4.667	.3	6.000	.0
1.000	59.7	2.333	2.5	3.667	.8	5.000	.2	6.333	.0

RUNOFF VOLUME = 1.63668 INCHES = 7.6560 ACRE-FEET
PEAK DISCHARGE RATE = 185.60 CFS AT .567 HOURS

14A/B + 19A/B

COMPUTE RATING CURVE RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0167 DIAM = 3.0 FT
N = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.16	.1	.5
.31	.4	2.0
.47	.7	4.6
.63	1.1	8.2
.78	1.5	12.8
.94	1.9	18.3
1.09	2.3	24.5
1.25	2.8	31.3
1.41	3.3	38.6
1.56	3.7	46.2
1.72	4.2	53.9
1.88	4.7	61.6
2.03	5.1	69.1
2.19	5.5	76.0
2.35	5.9	82.3
2.50	6.3	87.5
2.66	6.6	91.2
2.81	6.9	93.7

2.501	6.297	89.55	.0080
2.658	6.622	93.35	.0081
2.814	6.937	94.91	.0083
3.000	7.069	94.91	.0085

ROUTE ID = 3 HYDNO = 314.2 INFLOW ID = 2

TRAVEL TIME TABLE EXCEEDED

PRINT HYD ID = 3 CODE = 10

HYDROGRAPH FROM AREA 314.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	12.2	2.667	1.3	4.000	.4	5.333	.1
.333	4.8	1.667	5.2	3.000	1.0	4.333	.3	5.667	.0
.667	113.7	2.000	2.9	3.333	.8	4.667	.2	6.000	.0
1.000	43.2	2.333	1.8	3.667	.6	5.000	.1	6.333	.0

RUNOFF VOLUME = 1.61372 INCHES = 5.5167 ACRE-FEET
PEAK DISCHARGE RATE = 134.81 CFS AT .600 HOURS 14A Routed

COMPUTE NM HYD ID = 2 HYD NO = 314.3 DA = 0.0070 14B
PER A = 0 PER B = 10
PER C = 10 PER D = 80 Tp = 0.111111
RAIN = -1

K = .048202HR TP = .111111HR K/TP RATIO = .433815 SHAPE CONSTANT, N = 9.606547
UNIT PEAK = 31.951 CFS UNIT VOLUME = 1.000 B = 533.95
AREA = .005600 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .087507HR TP = .111111HR K/TP RATIO = .787562 SHAPE CONSTANT, N = 4.557643
UNIT PEAK = 4.9237 CFS UNIT VOLUME = .9982 B = 390.77
AREA = .001400 SQ MI IA = .28500 INCHES INF = 1.39000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 314.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.6	2.667	.1	4.000	.0	5.333	.0
.333	6.6	1.667	.3	3.000	.1	4.333	.0	5.667	.0
.667	8.5	2.000	.2	3.333	.1	4.667	.0	6.000	.0
1.000	4.0	2.333	.2	3.667	.1	5.000	.0		

RUNOFF VOLUME = 1.76796 INCHES = .6600 ACRE-FEET
PEAK DISCHARGE RATE = 21.19 CFS AT .467 HOURS 14B

ADD HYD ID = 2 HYD NO = 314.4 IDS = 2 AND 3
PRINT HYD ID = 2 CODE = 2

HYDROGRAPH FROM AREA 314.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	12.8	2.667	1.4	4.000	.5	5.333	.1
.067	.0	1.400	10.1	2.733	1.4	4.067	.4	5.400	.0
.133	.0	1.467	8.4	2.800	1.3	4.133	.4	5.467	.0
.200	.0	1.533	7.2	2.867	1.2	4.200	.4	5.533	.0

.733	84.5	2.067	2.6	3.400	.7	4.733	.2	6.067	.0
.800	67.0	2.133	2.3	3.467	.7	4.800	.2	6.133	.0
.867	55.9	2.200	2.1	3.533	.6	4.867	.1	6.200	.0
.933	48.5	2.267	2.0	3.600	.6	4.933	.1	6.267	.0
1.000	42.7	2.333	1.8	3.667	.4	5.000	.1	6.333	.0
1.067	37.8	2.400	1.7	3.733	.5	5.067	.1	6.400	.0
1.133	32.0	2.467	1.6	3.800	.5	5.133	.1	6.467	.0
1.200	23.6	2.533	1.5	3.867	.5	5.200	.1		
1.267	16.1	2.600	1.4	3.933	.4	5.267	.1		

RUNOFF VOLUME = 1.61372 INCHES = 5.5167 ACRE-FEET
PEAK DISCHARGE RATE = 135.00 CFS AT .567 HOURS

COMPUTE RATING CURVE RC = 3 VS NO = 1 CODE = -1
SLOPE = 0.0230 DIAM = 3.0 n = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.16	.1	.5
.31	.4	2.3
.47	.7	5.4
.63	1.1	9.6
.78	1.5	15.0
.94	1.9	21.5
1.09	2.3	28.7
1.25	2.8	36.3
1.41	3.3	45.3
1.56	3.7	54.2
1.72	4.2	63.3
1.88	4.7	72.3
2.03	5.1	81.1
2.19	5.5	89.2
2.35	5.9	96.6
2.50	6.3	102.7
2.66	6.6	107.0
2.81	6.9	108.8
3.00	7.1	108.8

COMPUTE TRAVEL TIME ID = 3 REACH NO = 8 NOVS = 1
L = 410 SLOPE = 0.0230

TRAVEL TIME TABLE

REACH= 6.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.156	.140	.44	.0346
.313	.391	2.01	.0222
.469	.706	4.67	.0172
.625	1.069	8.40	.0145
.782	1.465	13.12	.0127
.938	1.889	18.71	.0115
1.094	2.332	25.07	.0106
1.251	2.790	32.06	.0099
1.407	3.255	39.52	.0094
1.563	3.724	47.29	.0090
1.720	4.191	55.21	.0086
1.876	4.650	63.09	.0084
2.032	5.097	70.71	.0082
2.189	5.525	77.95	.0081

.625	1.068	8.40	.0159
.782	1.465	13.12	.0140
.938	1.889	18.71	.0126
1.094	2.332	25.07	.0116
1.251	2.790	32.06	.0109
1.407	3.255	39.52	.0103
1.563	3.724	47.29	.0098
1.720	4.191	55.21	.0095
1.876	4.650	63.09	.0092
2.032	5.097	70.71	.0090
2.189	5.525	77.85	.0089
2.345	5.928	84.23	.0088
2.501	6.297	89.55	.0088
2.658	6.622	93.35	.0089
2.814	6.887	94.91	.0091
3.000	7.069	94.91	.0093

ROUTE ID = 1 HYD NO = 319.2 INFLOW ID = 2

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 319.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	3.2	2.667	.4	4.000	.1	5.333	.0
.333	4.9	1.667	1.3	3.000	.3	4.333	.1	5.667	.0
.667	31.4	2.000	.8	3.333	.2	4.667	.1	6.000	.0
1.000	12.5	2.333	.5	3.667	.2	5.000	.0	6.333	.0

RUNOFF VOLUME = 1.66595 INCHES = 1.6793 ACRE-FEET

PEAK DISCHARGE RATE = 39.14 CFS AT .533 HOURS 19A + 19B ✓

COMPUTE NM HYD ID = 2 HYDNO = 314.1 DA = 0.0641 14A

PER A = 7.5 PER B = 15.0

PER C = 7.5 PER D = 70.0 Tp = 0.2111

RAIN = -1

K = .094477HR TP = .211100HR K/TP RATIO = .447547 SHAPE CONSTANT, N = 9.211378

UNIT PEAK = 131.36 CFS UNIT VOLUME = .9998 B = 617.99

AREA = .044870 SQ MI IA = .10050 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .189223HR TP = .211100HR K/TP RATIO = .896368 SHAPE CONSTANT, N = 3.954823

UNIT PEAK = 32.079 CFS UNIT VOLUME = .9997 B = 352.15

AREA = .019930 SQ MI IA = .32250 INCHES INF = 1.62750 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 2 CODE = 2

HYDROGRAPH FROM AREA 314.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	11.8	2.667	1.3	4.000	.4	5.333	.0
.067	.0	1.400	9.3	2.733	1.2	4.067	.4	5.400	.0
.133	.0	1.467	7.8	2.800	1.2	4.133	.4	5.467	.0
.200	.0	1.533	6.7	2.867	1.1	4.200	.3	5.533	.0
.267	.4	1.600	5.8	2.933	1.0	4.267	.3	5.600	.0
.333	7.8	1.667	5.1	3.000	1.0	4.333	.3	5.667	.0
.400	34.6	1.733	4.4	3.067	.9	4.400	.2	5.733	.0
.467	79.9	1.800	3.9	3.133	.9	4.467	.3	5.800	.0
.533	124.8	1.867	3.5	3.200	.8	4.533	.2	5.867	.0
.600	133.8	1.933	3.1	3.267	.8	4.600	.2	5.933	.0
.667	110.0	2.000	2.8	3.333	.7	4.667	.2	6.000	.0

.633	34.0	1.933	.8	3.233	.2	4.533	.1	5.833	.0
.667	30.5	1.967	.8	3.267	.2	4.567	.1	5.867	.0
.700	26.9	2.000	.8	3.300	.2	4.600	.1	5.900	.0
.733	23.9	2.033	.7	3.333	.2	4.633	.1	5.933	.0
.767	21.2	2.067	.7	3.367	.2	4.667	.1	5.967	.0
.800	19.1	2.100	.7	3.400	.2	4.700	.1	6.000	.0
.833	17.4	2.133	.6	3.433	.2	4.733	.1	6.033	.0
.867	16.0	2.167	.6	3.467	.2	4.767	.1	6.067	.0
.900	14.9	2.200	.6	3.500	.2	4.800	.1	6.100	.0
.933	13.9	2.233	.6	3.533	.2	4.833	.0	6.133	.0
.967	13.0	2.267	.6	3.567	.2	4.867	.0	6.167	.0
1.000	12.2	2.300	.5	3.600	.2	4.900	.0	6.200	.0
1.033	11.5	2.333	.5	3.633	.2	4.933	.0	6.233	.0
1.067	10.8	2.367	.5	3.667	.2	4.967	.0	6.267	.0
1.100	9.3	2.400	.5	3.700	.2	5.000	.0	6.300	.0
1.133	9.0	2.433	.5	3.733	.2	5.033	.0	6.333	.0
1.167	7.0	2.467	.4	3.767	.2	5.067	.0	6.367	.0
1.200	5.9	2.500	.4	3.800	.1	5.100	.0		
1.233	5.0	2.533	.4	3.833	.1	5.133	.0		
1.267	4.2	2.567	.4	3.867	.1	5.167	.0		

RUNOFF VOLUME = 1.66594 INCHES = 1.6793 ACRE-FEET
PEAK DISCHARGE RATE = 39.09 CFS AT .533 HOURS

COMPUTE RATING CURVE RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0175 DIAM = 3.0 FT
N = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.16	.1	.5
.31	.4	2.0
.47	.7	4.7
.63	1.1	8.4
.78	1.5	13.1
.94	1.9	18.7
1.09	2.3	25.1
1.25	2.8	32.1
1.41	3.3	39.5
1.56	3.7	47.3
1.72	4.2	55.2
1.88	4.7	63.1
2.03	5.1	70.7
2.19	5.5	77.8
2.35	5.9	84.2
2.50	6.3	89.5
2.66	6.6	93.4
2.81	6.9	94.9
2.00	7.1	94.9

COMPUTE TRAVEL TIME ID = 1 REACH NO = 5 NO VE = 1
L = 450 SLP = 0.0175

TRAVEL TIME TABLE

REACH= 5.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.156	.140	.46	.0379
.313	.391	2.01	.0243

.667	22.7	2.000	.6	3.333	.2	4.667	.0	6.000	.0
1.000	8.6	2.333	.4	3.667	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = 1.61375 INCHES = 1.0758 ACRE-FEET
PEAK DISCHARGE RATE = 25.65 CFS AT .300 HOURS 19A Routed

COMPUTE NM HYD ID = 1 HYD NO = 319.3 DA = 0.0064 SQ MI 19 B
PER A = 0 PER B = 10
PER C = 10 PER D = 80 Tp = 0.111111
RAIN = -1

K = .048202HR TP = .111111HR K/TP RATIO = .433816 SHAPE CONSTANT, N = 9.608647
UNIT PEAK = 29.812 CFS UNIT VOLUME = 1.000 B = 633.95
AREA = .005120 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .087507HR TP = .111111HR K/TP RATIO = .787562 SHAPE CONSTANT, N = 4.557642
UNIT PEAK = 4.5017 CFS UNIT VOLUME = .9979 B = 390.77
AREA = .001280 SQ MI IA = .28500 INCHES INF = 1.39000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 319.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.5	2.667	.1	4.000	.0	5.333	.0
.333	6.0	1.667	.3	3.000	.1	4.333	.0	5.667	.0
.667	7.8	2.000	.2	3.333	.1	4.667	.0	6.000	.0
1.000	3.6	2.333	.1	3.667	.1	5.000	.0		

RUNOFF VOLUME = 1.76796 INCHES = .6035 ACRE-FEET
PEAK DISCHARGE RATE = 19.37 CFS AT .467 HOURS 19B ✓

ADD HYD ID = 2 HYD NO = 319.4 IDS = 1 AND 2
PRINT HYD ID = 2

HYDROGRAPH FROM AREA 319.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.300	3.5	2.600	.4	3.900	.1	5.200	.0
.033	.0	1.333	3.0	2.633	.4	3.933	.1	5.233	.0
.067	.0	1.367	2.6	2.667	.4	3.967	.1	5.267	.0
.100	.0	1.400	2.4	2.700	.4	4.000	.1	5.300	.0
.133	.0	1.433	2.1	2.733	.4	4.033	.1	5.333	.0
.167	.0	1.467	2.0	2.767	.3	4.067	.1	5.367	.0
.200	.0	1.500	1.8	2.800	.3	4.100	.1	5.400	.0
.233	.1	1.533	1.7	2.833	.3	4.133	.1	5.433	.0
.267	1.0	1.567	1.6	2.867	.3	4.167	.1	5.467	.0
.300	3.3	1.600	1.5	2.900	.3	4.200	.1	5.500	.0
.333	6.5	1.633	1.3	2.933	.3	4.233	.1	5.533	.0
.367	10.8	1.667	1.3	2.967	.3	4.267	.1	5.567	.0
.400	17.1	1.700	1.2	3.000	.3	4.300	.1	5.600	.0
.433	24.9	1.733	1.1	3.033	.3	4.333	.1	5.633	.0
.467	32.9	1.767	1.1	3.067	.3	4.367	.1	5.667	.0
.500	37.8	1.800	1.0	3.100	.3	4.400	.1	5.700	.0
.533	39.1	1.833	1.0	3.133	.3	4.433	.1	5.733	.0
.567	32.5	1.867	.9	3.167	.3	4.467	.1	5.767	.0
.600	24.6	1.900	.8	3.200	.3	4.500	.1	5.800	.0

COMPUTE RATING CURVE RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0179 DIAM = 2.5 FT
n = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.13	.1	.3
.26	.3	1.2
.39	.5	2.9
.52	.7	5.2
.65	1.0	8.1
.78	1.3	11.6
.91	1.6	15.6
1.04	1.9	19.9
1.17	2.3	24.5
1.30	2.6	29.3
1.43	2.9	34.2
1.56	3.2	39.1
1.69	3.5	43.9
1.82	3.8	48.3
1.95	4.1	52.2
2.08	4.4	55.5
2.21	4.6	57.9
2.35	4.8	58.9
2.50	4.9	58.9

COMPUTE TRAVEL TIME ID = 2 REACH NO = 9 NO VS = 1
L = 700 SLOPE = 0.0178

TRAVEL TIME TABLE
REACH= 9.0

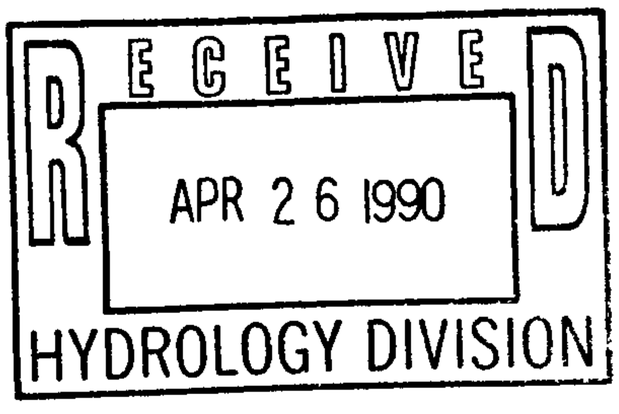
WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.130	.098	.29	.0661
.261	.371	1.25	.0424
.391	.490	2.90	.0329
.521	.741	5.21	.0277
.651	1.017	8.14	.0243
.782	1.312	11.51	.0220
.912	1.620	15.35	.0203
1.042	1.937	19.88	.0189
1.173	2.261	24.51	.0179
1.303	2.586	27.23	.0171
1.433	2.910	34.24	.0165
1.563	3.229	37.13	.0160
1.694	3.540	43.85	.0157
1.824	3.837	48.23	.0155
1.954	4.117	52.24	.0153
2.084	4.373	55.54	.0153
2.215	4.599	57.90	.0154
2.345	4.783	58.87	.0158
2.500	4.904	58.87	.0162

ROUTE ID = 2 HYD NO = 319.1 INFLOW ID = 1
PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 319.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.5	2.667	.3	4.000	.1	5.333	.0

Rae's
O.K. JSF




```
    HYMO PROGRAM (AHYMO889) - AMAFCA VERSION  NOV.,1989
             RUN DATE (MON/DAY/YR) = 04/15/1990
             START TIME (HR:MIN:SEC) = 22:49:01

START                    TIME = 0.00
COMPUTE NM HYD           ID = 1  HYD NO = 319.0  DA = 0.0125 SQ MI   19A
                         PER A = 7.5     PER B = 15.0
                         PER C = 7.5     PER D = 70.0    Tp = 0.2111 hr
                         RAIN ONE = 2.01 RAIN SIX = 2.34
                COMPUTED RAINFALL DISTRIBUTION WITH DT=0.033333 HOURS
                   .0000   .0011   .0046   .0135   .0315   .0621   .1091
                   .1765   .2687   .3898   .5441   .7363   .9709  1.1735
                  1.2643  1.3415  1.4102  1.4729  1.5308  1.5846  1.6350
                  1.6823  1.7269  1.7691  1.8090  1.8469  1.8829  1.9171
                  1.9496  1.9805  2.0100  2.0151  2.0198  2.0244  2.0289
                  2.0333  2.0376  2.0419  2.0461  2.0502  2.0542  2.0582
                  2.0621  2.0659  2.0697  2.0734  2.0771  2.0807  2.0842
                  2.0877  2.0911  2.0943  2.0979  2.1012  2.1044  2.1076
                  2.1108  2.1139  2.1170  2.1200  2.1230  2.1260  2.1289
                  2.1318  2.1346  2.1375  2.1402  2.1430  2.1457  2.1484
                  2.1510  2.1537  2.1563  2.1588  2.1614  2.1639  2.1664
                  2.1688  2.1713  2.1737  2.1761  2.1784  2.1808  2.1831
                  2.1854  2.1876  2.1899  2.1921  2.1943  2.1965  2.1987
                  2.2008  2.2029  2.2050  2.2071  2.2092  2.2113  2.2133
                  2.2153  2.2173  2.2193  2.2212  2.2232  2.2251  2.2270
                  2.2289  2.2308  2.2327  2.2345  2.2364  2.2382  2.2400
                  2.2418  2.2436  2.2454  2.2471  2.2489  2.2506  2.2523
                  2.2540  2.2557  2.2574  2.2591  2.2607  2.2624  2.2640
                  2.2656  2.2672  2.2688  2.2704  2.2720  2.2736  2.2751
                  2.2767  2.2782  2.2797  2.2813  2.2828  2.2843  2.2857
                  2.2872  2.2887  2.2902  2.2916  2.2930  2.2945  2.2959
                  2.2973  2.2987  2.3001  2.3015  2.3029  2.3043  2.3056
                  2.3070  2.3083  2.3097  2.3110  2.3123  2.3137  2.3150
                  2.3163  2.3176  2.3189  2.3202  2.3214  2.3227  2.3240
                  2.3252  2.3265  2.3277  2.3289  2.3302  2.3314  2.3326
                  2.3338  2.3350  2.3362  2.3374  2.3386  2.3400

    K =   .091578HR    TP =   .211100HR    K/TP RATIO =   .433816     SHAPE CONSTANT, N =  9.608647
    UNIT PEAK =   26.277    CFS   UNIT VOLUME =    .9993       B =   632.95
    AREA =      .008750 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD


    K =   .190342HR    TP =   .211100HR    K/TP RATIO =   .904066     SHAPE CONSTANT, N =  3.919039
    UNIT PEAK =   6.2127    CFS   UNIT VOLUME =    .9979       B =   349.74
    AREA =      .003750 SQ MI    IA =    .32250 INCHES    INF =   1.42750 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD                ID = 1  CODE = 10

                                HYDROGRAPH FROM AREA   319.00

    TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
     HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
    .000       .0           1.333      2.2          2.667       .2          4.000       .1          5.333       .0
    .333      1.5           1.667      1.0          3.000       .2          4.333       .1          5.667       .0
    .667     21.3           2.000       .5          3.333       .1          4.667       .0          6.000       .0
   1.000      8.3           2.333       .3          3.667       .1          5.000       .0

    RUNOFF VOLUME =     1.61372 INCHES     =       1.0759 ACRE-FEET
     PEAK DISCHARGE RATE =      26.63 CFS    AT      .567 HOURS
```

```
    HYMO PROGRAM (AHYMO889) - AMAFCA VERSION  NOV., 1989
              RUN DATE (MON/DAY/YR) = 01/24/1990
              START TIME (HR:MIN:SEC) = 14:22:02

START                         TIME = 0.00
COMPUTE NM HYD                ID = 1  HYD NO = 319.0  DA = 0.0125 SQ MI
                              PER A = 7.5      PER B = 15.0
                              PER C = 7.5      PER D = 70.0     Tp = 0.2111 hr
                              RAIN ONE = 2.01 RAIN SIX = 2.34
                   COMPUTED RAINFALL DISTRIBUTION WITH DT=0.033333 HOURS
                       .0000   .0011   .0046   .0136   .0315   .0621   .1091
                       .1766   .2687   .3898   .5441   .7363   .9709  1.1733
                      1.2643  1.3415  1.4102  1.4729  1.5308  1.5846  1.6350
                      1.6823  1.7269  1.7691  1.8090  1.8469  1.8829  1.9171
                      1.9496  1.9805  2.0100  2.0151  2.0198  2.0244  2.0289
                      2.0333  2.0376  2.0419  2.0461  2.0502  2.0542  2.0582
                      2.0621  2.0659  2.0697  2.0734  2.0771  2.0807  2.0842
                      2.0877  2.0911  2.0945  2.0979  2.1012  2.1044  2.1076
                      2.1108  2.1139  2.1170  2.1200  2.1230  2.1260  2.1289
                      2.1318  2.1346  2.1375  2.1402  2.1430  2.1457  2.1484
                      2.1510  2.1537  2.1563  2.1588  2.1614  2.1639  2.1664
                      2.1688  2.1713  2.1737  2.1761  2.1784  2.1808  2.1831
                      2.1854  2.1876  2.1899  2.1921  2.1943  2.1965  2.1987
                      2.2008  2.2029  2.2050  2.2071  2.2092  2.2113  2.2133
                      2.2153  2.2173  2.2193  2.2212  2.2232  2.2251  2.2270
                      2.2289  2.2308  2.2327  2.2345  2.2364  2.2382  2.2400
                      2.2418  2.2436  2.2454  2.2471  2.2489  2.2506  2.2523
                      2.2540  2.2557  2.2574  2.2591  2.2607  2.2624  2.2640
                      2.2656  2.2672  2.2688  2.2704  2.2720  2.2736  2.2751
                      2.2767  2.2782  2.2797  2.2813  2.2828  2.2843  2.2857
                      2.2872  2.2887  2.2902  2.2916  2.2930  2.2945  2.2959
                      2.2973  2.2987  2.3001  2.3015  2.3029  2.3043  2.3056
                      2.3070  2.3083  2.3097  2.3110  2.3123  2.3137  2.3150
                      2.3163  2.3176  2.3189  2.3202  2.3214  2.3227  2.3240
                      2.3252  2.3265  2.3277  2.3289  2.3302  2.3314  2.3326
                      2.3338  2.3350  2.3362  2.3374  2.3386  2.3400

     K =   .091578HR     TP =   .211100HR     K/TP RATIO =   .433816     SHAPE CONSTANT, N =  9.608647
     UNIT PEAK =   26.277     CFS   UNIT VOLUME =    .9993       B =   633.95
     AREA =       .008750 SQ MI     IA =    .10000 INCHES     INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD


     K =   .190848HR     TP =   .211100HR     K/TP RATIO =   .904066     SHAPE CONSTANT, N =  3.919039
     UNIT PEAK =   6.2127     CFS   UNIT VOLUME =    .9979       B =   349.74
     AREA =       .003750 SQ MI     IA =    .32250 INCHES     INF =   1.62750 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD                     ID = 1  CODE = 10

                                   HYDROGRAPH FROM AREA   319.00

      TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
       HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
      .000        .0         1.333       2.2         2.667        .2         4.000        .1         5.333        .0
      .333       1.5         1.667       1.0         3.000        .2         4.333        .1         5.667        .0
      .667      21.5         2.000        .5         3.333        .1         4.667        .0         6.000        .0
     1.000       8.3         2.333        .3         3.667        .1         5.000        .0

     RUNOFF VOLUME =      1.61372 INCHES      =       1.0758 ACRE-FEET
      PEAK DISCHARGE RATE =       26.63 CFS     AT       .567 HOURS
```

COMPUTE RATING CURVE RC = 1 VS NO = 1 CODE = -1
SLOPE = 0.0178 DIAM = 2.5 FT
n = 0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.13	.1	.3
.26	.3	1.2
.39	.5	2.9
.52	.7	5.2
.65	1.0	8.1
.78	1.3	11.6
.91	1.6	15.6
1.04	1.9	19.9
1.17	2.3	24.5
1.30	2.6	29.3
1.43	2.9	34.2
1.56	3.2	39.1
1.69	3.5	43.9
1.82	3.8	48.3
1.95	4.1	52.2
2.08	4.4	55.5
2.21	4.6	57.9
2.35	4.8	58.9
2.50	4.9	58.9

COMPUTE TRAVEL TIME ID = 2 REACH NO = 9 NO VS = 1
L = 700 SLOPE = 0.0178

TRAVEL TIME TABLE

REACH= 9.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.130	.098	.29	.0661
.261	.271	1.25	.0424
.391	.490	2.90	.0329
.521	.741	5.21	.0277
.651	1.017	8.14	.0243
.782	1.312	11.61	.0220
.912	1.620	15.55	.0203
1.042	1.937	19.88	.0189
1.173	2.261	24.51	.0179
1.303	2.586	29.33	.0171
1.433	2.910	34.24	.0165
1.563	3.229	39.13	.0160
1.694	3.540	43.85	.0157
1.824	3.837	48.28	.0155
1.954	4.117	52.24	.0153
2.084	4.373	55.54	.0153
2.215	4.599	57.90	.0154
2.345	4.783	58.87	.0158
2.500	4.909	58.87	.0162

ROUTE ID = 2 HYD NO = 319.1 INFLOW ID = 1
PRINT HYD ID = 2 CODE = 10

HYDROGRAPH FROM AREA 319.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.5	2.667	.3	4.000	.1	5.333	.0
.333	.5	1.667	1.0	3.000	.2	4.333	.1	5.667	.0
.667	22.7	2.000	.6	3.333	.2	4.667	.0	6.000	.0

1.000	8.6	2.333	.4	3.667	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = 1.61375 INCHES = 1.0758 ACRE-FEET
PEAK DISCHARGE RATE = 26.65 CFS AT .600 HOURS

COMPUTE NM HYD ID = 1 HYD NO = 319.3 DA = 0.0064 SQ MI
PER A = 0 PER B = 10
PER C = 10 PER D = 80 Tp = 0.111111
RAIN = -1

K = .048202HR TP = .111111HR K/TP RATIO = .433816 SHAPE CONSTANT, N = 9.608647
UNIT PEAK = 29.212 CFS UNIT VOLUME = 1.000 B = 633.95
AREA = .005120 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

K = .087507HR TP = .111111HR K/TP RATIO = .787562 SHAPE CONSTANT, N = 4.557642
UNIT PEAK = 4.5017 CFS UNIT VOLUME = .9979 B = 390.77
AREA = .001280 SQ MI IA = .28500 INCHES INF = 1.39000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD

PRINT HYD ID = 1 CODE = 10

HYDROGRAPH FROM AREA 319.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.5	2.667	.1	4.000	.0	5.333	.0
.333	6.0	1.667	.3	3.000	.1	4.333	.0	5.667	.0
.667	7.8	2.000	.2	3.333	.1	4.667	.0	6.000	.0
1.000	3.6	2.333	.1	3.667	.1	5.000	.0		

RUNOFF VOLUME = 1.76796 INCHES = .6035 ACRE-FEET
PEAK DISCHARGE RATE = 19.37 CFS AT .467 HOURS

ADD HYD ID = 2 HYD NO = 319.4 IDS = 1 AND 2
PRINT HYD ID = 2

HYDROGRAPH FROM AREA 319.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.300	3.5	2.600	.4	3.900	.1	5.200	.0
.033	.0	1.333	3.0	2.633	.4	3.933	.1	5.233	.0
.067	.0	1.367	2.6	2.667	.4	3.967	.1	5.267	.0
.100	.0	1.400	2.4	2.700	.4	4.000	.1	5.300	.0
.133	.0	1.433	2.1	2.733	.4	4.033	.1	5.333	.0
.167	.0	1.467	2.0	2.767	.3	4.067	.1	5.367	.0
.200	.0	1.500	1.8	2.800	.3	4.100	.1	5.400	.0
.233	.1	1.533	1.7	2.833	.3	4.133	.1	5.433	.0
.267	1.0	1.567	1.6	2.867	.3	4.167	.1	5.467	.0
.300	3.3	1.600	1.5	2.900	.3	4.200	.1	5.500	.0
.333	6.5	1.633	1.3	2.933	.3	4.233	.1	5.533	.0
.367	10.8	1.667	1.3	2.967	.3	4.267	.1	5.567	.0
.400	17.1	1.700	1.2	3.000	.3	4.300	.1	5.600	.0
.433	24.9	1.733	1.1	3.033	.3	4.333	.1	5.633	.0
.467	32.8	1.767	1.1	3.067	.3	4.367	.1	5.667	.0
.500	37.8	1.800	1.0	3.100	.3	4.400	.1	5.700	.0
.533	39.1	1.833	1.0	3.133	.3	4.433	.1	5.733	.0
.567	38.5	1.867	.9	3.167	.3	4.467	.1	5.767	.0
.600	36.9	1.900	.9	3.200	.2	4.500	.1	5.800	.0
.633	34.0	1.933	.8	3.233	.2	4.533	.1	5.833	.0

.667	30.5	1.967	.8	3.267	.2	4.567	.1	5.867	.0
.700	26.9	2.000	.8	3.300	.2	4.600	.1	5.900	.0
.733	23.8	2.033	.7	3.333	.2	4.633	.1	5.933	.0
.767	21.2	2.067	.7	3.367	.2	4.667	.1	5.967	.0
.800	19.1	2.100	.7	3.400	.2	4.700	.1	6.000	.0
.833	17.4	2.133	.6	3.433	.2	4.733	.1	6.033	.0
.867	16.0	2.167	.6	3.467	.2	4.767	.1	6.067	.0
.900	14.9	2.200	.6	3.500	.2	4.800	.1	6.100	.0
.933	13.9	2.233	.6	3.533	.2	4.833	.0	6.133	.0
.967	13.0	2.267	.6	3.567	.2	4.867	.0	6.167	.0
1.000	12.2	2.300	.5	3.600	.2	4.900	.0	6.200	.0
1.033	11.5	2.333	.5	3.633	.2	4.933	.0	6.233	.0
1.067	10.6	2.367	.5	3.667	.2	4.967	.0	6.267	.0
1.100	9.3	2.400	.5	3.700	.2	5.000	.0	6.300	.0
1.133	8.0	2.433	.5	3.733	.2	5.033	.0	6.333	.0
1.167	7.0	2.467	.4	3.767	.2	5.067	.0	6.367	.0
1.200	5.9	2.500	.4	3.800	.1	5.100	.0		
1.233	5.0	2.533	.4	3.833	.1	5.133	.0		
1.267	4.2	2.567	.4	3.867	.1	5.167	.0		

RUNOFF VOLUME = 1.66594 INCHES = 1.6793 ACRE-FEET
PEAK DISCHARGE RATE = 39.08 CFS AT .533 HOURS

FINISH

END TIME (HR:MIN:SEC) = 14:24:02

NEW MEXICO STATE HIGHWAY
AND TRANSPORTATION DEPARTMENT
AN EQUAL OPPORTUNITY EMPLOYER

RECEIVED
APR 26 1990
HYDROLOGY DIVISION

April 24, 1990

GARREY CARRUTHERS
GOVERNOR

COMMISSION

Willie Ortiz
Chairman, Santa Fe

J. V. "Rip" Curtis
Vice-Chairman, Clovis

Mary Jean Christensen
Secretary, Gallup

Jack Westman
Member, Albuquerque

Dr. Donald Reif
Member, Clayton

Quentin Ford
Member, Las Cruces

DEPARTMENT

Secretary
Dewey Lonsberry

General Office
P.O. Box 1149
Santa Fe, N M
87504-1149
505-827-5100

District One Office
P.O.Box 231
Deming, N.M.
88031-0231
505-546-2603

District Two Office
P O Box 1457
Roswell, N M
88202-1457
505-624-3300

District Three Office
P.O Box 3768
Station D
Albuquerque, N M
87190-3768
505-841-2700

District Four Office
P.O Box 30
Las Vegas, N.M.
87701-0030
505-425-7527

District Five Office
P O Box 4127
Coronado Station
Santa Fe, N M
87502-4127
505-827-9500

District Six Office
P O. Box 2159
Milan, N M
87021
505-285-6623

Mr. Carlos Montoya
Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87109

Subject: Drainage Recommendation for West Frontage Road West Channel & Office Boulevard North Channel (F-17/D63)

Dear Carlos:

We have revised and made a detailed study of the subject project and have analyzed all the comments on your letter of February 20, 1990.

We used the Modified HYMO computational Method from Mr. Cliff Anderson of AMAFCA to calculate the 100 year design flow. The expected flow from the existing 1-36" pipe at the north end of the channel is 146 cfs, 424 cfs is expected at the southwest of Jefferson Interchange into the West Frontage Road West Channel. As the channel turns 90° at the intersection of Frontage Road and Office Boulevard, there is an expected flow of 540 cfs into the Office Boulevard north channel and a 618 cfs flow at the crossing on Office Boulevard at the existing 2-60" CMP's, where we are adding 1-60" CMP to accommodate 618 cfs flow.

Throughout the channel there will be reinforced concrete lining. The recommended trapezoidal channel dimensions are 6 foot bottom width with 2:1 side slopes at the West Frontage Road West Channel and 8 foot bottom width with 2:1 side slopes at the Office Boulevard north channel. There are four drop structures to limit the channel slope at 0.005 Ft./Ft. In addition, there are chute blocks and baffle piers at the two drop structures upstream of the 90° bends on 3-36" RCPs and 3-60" CMPs locations to minimize the hydraulic jumps.

Sheet 1 of 3 depicts the location of the centerline of the proposed channel in reference to the existing right of way and the limit of the Construction Maintenance Easement.

HINKLE, COX, EATON, COFFIELD & HENSLEY

ATTORNEYS AT LAW

500 MARQUETTE N.W., SUITE 800

ALBUQUERQUE, NEW MEXICO 87102-2121

(505) 768-1500

FAX (505) 768-1529

LEWIS C COX
PAUL W EATON
CONRAD E COFFIELD
HAROLD L HENSLEY, JR
STUART D SHANOR
ERIC D LANPHERE
C D MARTIN
PAUL J KELLY, JR
MARSHALL G MARTIN
OWEN M LOPEZ
DOUGLAS L LUNSFORD
JOHN J KELLY
T CALDER EZZELL, JR
WILLIAM B BURFORD*
RICHARD E. OLSON
RICHARD R WILFONG*
THOMAS J McBRIDE
STEVEN D ARNOLD
JAMES J WECHSLER
NANCY S CUSACK
JEFFREY L FORNACIARI
JEFFREY D HEWETT
JAMES BRUCE
JERRY F SHACKELFORD*
JEFFREY W HELLBERG*
ALBERT L PITTS
THOMAS M HNASKO
JOHN C CHAMBERS*
MICHAEL A. GROSS
THOMAS D HAINES, JR
FRANKLIN H McCALLUM*
GREGORY J NIBERT

DAVID T MARKETTE*
MARK C DOW
KAREN M RICHARDSON*
FRED W SCHWENDIMANN
JAMES M HUDSON

RAYMOND HAMILTON
STANLEY K KOTOVSKY
BETTY H LITTLE*
JEFFREY S BAIRD*
RUTH S MUSGRAVE
HOWARD R THOMAS
PATRICIA A WATTS
NANCY AUGUSTUS
MACDONNELL GORDON
REBECCA NICHOLS JOHNSON
PAUL R NEWTON
WILLIAM P JOHNSON
ELLEN S CASEY
S BARRY PAISNER
MARGARET CARTER LUDEWIG
MARTIN MEYERS
GREGORY S WHEELER
ANDREW J CLOUTIER
JAMES A. GILLESPIE
GARY W LARSON
STEPHANIE LANDRY
JERRY D WORSHAM II
JOHN R KULSETH, JR
TONY CONNERS*

*NOT LICENSED IN NEW MEXICO

OF COUNSEL
O M CALHOUN
MACK EASLEY
JOE W WOOD

CLARENCE E HINKLE (1901-1985)
W. E. BONDURANT, JR (1913-1973)
ROY C SNODGRASS, JR (1914-1987)

700 UNITED BANK PLAZA
POST OFFICE BOX 10
ROSWELL, NEW MEXICO 88202
(505) 622-6510
FAX (505) 623-9332

2800 CLAYDESTA NATIONAL BANK BUILDING
POST OFFICE BOX 3580
MIDLAND, TEXAS 79702
(915) 683-4691
FAX (915) 683-6518

1700 TEAM BANK BUILDING
POST OFFICE BOX 9238
AMARILLO, TEXAS 79105
(806) 372-5569
FAX (806) 372-9761

218 MONTEZUMA
POST OFFICE BOX 2068
SANTA FE, NEW MEXICO 87504
(505) 982-4554

June 1, 1990

FILE

Hugh W. Parry, II, Esq.
General Counsel
New Mexico State Highway
and Transportation Department
P. O. Box 1149
Santa Fe, NM 87504-1149

Re: SHTD v. Digital Eqipment Corporation, et al.
Second Judicial District Court Cause No. CV-85-09414
Project No. UI-025-4 (52) 222

Dear Hugh::

Please find enclosed the letter of Mr. Gilbert Aldaz, City/County Floodplain Administrator requesting certain map revisions and comments so that the City can make a formal request to the Federal Emergency Management Agency (FEMA) for a Conditional Letter of Map revision request.

With respect to Points 1, 2 and 3, in the May 24, 1990 letter to Ron Gaines, Digital would request that Mr. Gaines prepare Points 1, 2 and 3 for submission to the City. Digital would request that a copy of the Flood Insurance Rate Map panel also be forwarded to me.

As to Note 9 on the Plat of Survey, I have discussed this note with City Hydrology and based upon the requirements of City Hydrology, the following language is proposed:

The drainage easement dedicated to the New Mexico State Highway and Transportation Department by this plat of survey is intended in the future to remove the Digital Equipment Corporation property from the F.E.M.A. 100-year flood zone. By virtue of Digital Equyipment Corporation grant of a drainage easement to remove the property from the F.E.M.A. 100-year flood zone, and New Mexico State Highway and Transportation Department acceptance of the easement, all drainage requirements, ponding requirements and drainage administrative requirements necessary for development of the property for off-sight water are deemed satisfied, and the Digital property shall hereafter not be required to submit off-sight water drainage development plans for future development of its property. The New Mexico State Highway and Transportation Department will provide the necessary floodplain improvements for a Conditional Letter of May Revision and a Final letter of Map Revision from F.E.M.A.

The revisions of Note 9 have been resubmitted to Mr. Fred Aguirre, Mr. Gilbert Aldaz and Mr. Clifford Anderson for their review.

We would request your earliest review of these matters so that we may move forward with the signing of the Easement, transfer of the Singer parcels purchased by Digital in the settlement and replatting of the property. Your earliest review and consultation with Mr. Ron Gaines is requested for Points 1, 2 and 3. Mr. Gilbert Aldaz has also requested that a time line estimate for construction and completion of the drainage culvert be submitted his office.

Should you have any questions, please call me at your earliest convenience.

Very truly yours,

HINKLE, COX, EATON, COFFIELD
& HENSLEY

By: _____
MARK C. DOW
For the Firm

cc:
Mr. Fred Aguirre
Mr. Gilbert Aldaz
Mr. Clifford E. Anderson

MCD:g

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

MAY 29 1990

RECEIVED
JUN - 5
HYDROLOGY DIVISION

May 24, 1990

Ronald E. Gaines, Drainage Engineer
State Highway Department
Drainage Section
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

RE: CONDITIONAL LETTER OF MAP REVISION REQUEST FOR WEST FRONTAGE ROAD, WEST CHANNEL & OFFICE BOULEVARD NORTH CHANNEL, RECEIVED APRIL 26, 1990, (F-17/D63)

Dear Mr. Gaines:

Before City Hydrology can make a formal submittal to the Federal Emergency Management Agency (FEMA) for a Conditional Letter of Map Revision request, the following comments must be addressed:

1. The HYMO computer output for drainage basin 12A identifies a peak flow of 324.92 cfs, 147.69 cfs is routed through the culverts, what happens to the remaining 177.23 cfs?

2. Could you please provide us a plan view of the proposed improvements which correspond tc the profile. This plan view should include the improvements, topography, stationing, easement/right-of-way boundaries, existing utilities and a reference to details.

3. Please include a Flood Insurance Rate Map panel which identifies the location of these proposed improvements and the floodplain which will be removed because of the improvements.

4. Please be advised that note 9 on the Plat of Survey is unacceptable. Signing of this plat by City Hydrology will not release Digital Property's from the requirements of submitting drainage plans for future development.

The Conditional Letter of Map Revision initiates FEMA to begin review, and provide comments to your request for removal of the 100 year floodplain from the center of Parcel 3. Once the improvements are constructed, as-builts will be required for submittal to FEMA to request a Letter of Map Revision, then this office can sign-off on the final plat. If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

Gilbert Aldaz, P.E. & L.S.
City/County Floodplain Administrator

xc: Clifford E. Anderson, AMAFCA

GA
(WP+1293)

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 24, 1990

Ronald E. Gaines, Drainage Engineer
State Highway Department
Drainage Section
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

RE: CONDITIONAL LETTER OF MAP REVISION REQUEST FOR WEST FRONTAGE ROAD, WEST CHANNEL & OFFICE BOULEVARD NORTH CHANNEL, RECEIVED APRIL 26, 1990, (F-17/D63)

Dear Mr. Gaines:

Before City Hydrology can make a formal submittal to the Federal Emergency Management Agency (FEMA) for a Conditional Letter of Map Revision request, the following comments must be addressed:

1. The HYMO computer output for drainage basin 12A identifies a peak flow of 324.92 cfs, 147.69 cfs is routed through the culverts, what happens to the remaining 177.23 cfs?

2. Could you please provide us a plan view of the proposed improvements which correspond to the profile. This plan view should include the improvements, topography, stationing, easement/right-of-way boundaries, existing utilities and a reference to details.

3. Please include a Flood Insurance Rate Map panel which identifies the location of these proposed improvements and the floodplain which will be removed because of the improvements.

4. Please be advised that note 9 on the Plat of Survey is unacceptable. Signing of this plat by City Hydrology will not release Digital Property's from the requirements of submitting drainage plans for future development.

The Conditional Letter of Map Revision initiates FEMA to begin review, and provide comments to your request for removal of the 100 year floodplain from the center of Parcel 3. Once the improvements are constructed, as-builts will be required for submittal to FEMA to request a Letter of Map Revision, then this office can sign-off on the final plat. If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

Gilbert Aldaz, P.E. & L.S.
City/County Floodplain Administrator

xc: Clifford E. Anderson, AMAFCA

GA
(WP+1293)

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 31, 2003

Christopher Weiss, P.E.
C.L. Weiss Engineering
P.O. Box 97
Albuquerque, NM 87047

Re: Jefferson Commons II – Lot 6 Building B, Certificate of Occupancy
Engineer's Stamp dated 7-22-03 (F17/D63)
Certification dated 10-31-03

Dear Mr. Weiss,

Based upon the information provided in your submittal received 10-31-03, the above referenced certification is approved for release of 30-day temporary Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: Phyllis Villanueva
file

DRAINAGE INFORMATION SHEET
(REV. 11/01/2001)

PROJECT TITLE: Jefferson Commons II – Lot 6 Buildings B
ZONE MAP / DRG. FILE #: F-17/D63A
DRB #: _____ EPC #: _____
WORK ORDER #: _____

LEGAL DESCRIPTION: A portion of Parcel 6 - Digital Properties, Albuquerque, NM

CITY ADDRESS: _____

ENGINEERING FIRM: C.L. Weiss Engineering
ADDRESS: P.O. Box 97
CITY, STATE: Sandia Park, New Mexico
CONTACT: Chris Weiss
PHONE: 281-1800
ZIP CODE: 87047

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

ARCHITECT: Berent Groth
ADDRESS: 1100 Alvarado Dr. NE
CITY, STATE: Albuquerque, New Mexico
CONTACT: Berent Groth
PHONE: 266-6700
ZIP CODE: 87110

SURVEYOR: Forstbauer Surveying Co.
ADDRESS: _____
CITY, STATE: Albuquerque, New Mexico
CONTACT: Ron Forstbauer
PHONE: 268-2112
ZIP CODE: 87110

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

CHECK TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
_____ DRAINAGE PLAN
_____ CONCEPTUAL GRADING & DRAINAGE PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
__X__ ENGINEER'S CERTIFICATION (HYDROLOGY)
_____ CLOMR / LOMR
_____ TRAFFIC CIRCULATION LAYOUT (TCL)
_____ ENGINEER'S CERTIFICATION (TCL)
_____ ENGINEER'S CERTIFICATION (DRB APPR, SITE PLAN)
_____ OTHER

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____ YES
__X__ NO
_____ COPY PROVIDED

RECEIVED
OCT 31 2003
HYDROLOGY SECTION

DATE SUBMITTED: Friday, October 31, 2003
BY: C.L. Weiss Engineering, Inc.

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

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

October 31, 2003

Mr. Bradley Bingham
Hydrology Division
City of Albuquerque

RE: JEFFERSON COMM0NS II – LOT 6 - BUILDING B GRADING AND DRAINAGE PLAN
(F17/D63)

Dear Mr. Bingham,

Enclosed with this letter is an Engineer's certified copy the above referenced property. The Owner is asking for a temporary Certificate of Occupancy. Based on site inspection and surveyed as-built information, the site is in substantial compliance with the approved Drainage and Grading Plan dated 7-22-03.

The exception is the elimination of curb and gutter along the south property line. Due to this change, parking lot flow will pass into the adjacent property (same owner) where it will be carried within an existing concrete valley gutter to the existing storm drain inlet.

Per the approved design, these flows were also directed to this same storm drain inlet. The inlet is in a sump (approx. 1' deep) and has ample capacity to accept this additional surface flow.

We have notified the Owner that a cross lot drainage easement will be required and will need to be completed and recorded prior the completion of the adjacent Building 'C'.

Please don't hesitate to call me at 266-3444 or Chris Weiss at 281-1800 with any questions or comments.

Sincerely,

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

RECEIVED
OCT 31 2003
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 19, 2004

Scott McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. NE
Albuquerque, NM 87108

Re: Jefferson Commons II – Lot 6 Building C, 5411 Jefferson St, Temporary Certificate of Occupancy

Engineer's Stamp dated 7-22-03 (F17/D63)

Certification dated 4-19-04

Dear Mr. McGee,

Based upon the information provided in your submittal received 4-19-04, the above referenced certification is approved for release of 30-day Temporary Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: Phyllis Villanueva
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

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

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

November 29, 1999

Mr. John Murray, PE
COA Hydrology
P O Box 1293
Albuquerque, NM 87103

Re: Jefferson Commons I Drainage Channel

Dear Mr. Murray:

This information is to provide the documentation of the flow characteristics for the channel entrance at the end of Commons Ave., referenced in our November 4, 1999 submittal of the DG plan for Lot 6, Jefferson Commons II. Particularly, the reference cross sections are shown on the channel plan.

It is our intention to revise the existing channel entrance to accept the revised offsite basin flows of 92.7 cfs, as documented by the DG submittal. Richard Heggen provided the HEC-RAS analysis and stated the following: "Flow backs up trying to get into the channel, passes through critical depth near the steel post and is supercritical onward. Critical depth is 1.4 feet in the 10 ft. channel. Flow is within the channel below the steel post, but not the EGL I don't see this as a big problem, as anything that gets in the channel that could cause a jump should just wash right through." He recommended that the steel post be taken to help the flow characteristics within the channel. We will provide other barrier posts along the curb line for traffic control where the flow characteristics are subcritical.

Included with this submittal are photos of the existing channel entrance for your information.

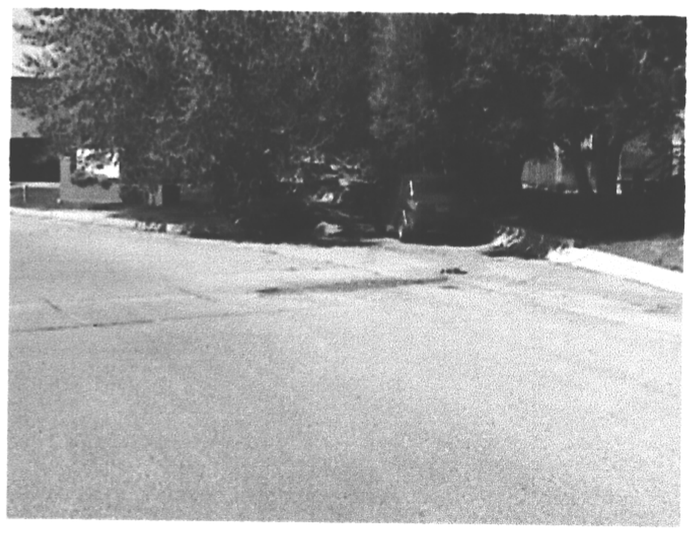
Please call me at 281-1800 if you have any questions concerning this submittal. Thank you.

Sincerely,

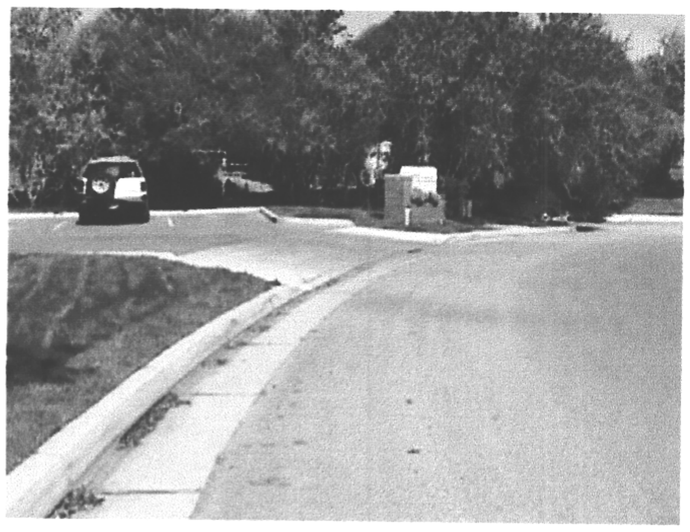
Christopher L. Weiss, P.E.
C. L. Weiss Engineering, Inc.

RECEIVED
NOV 04 1999
HYDROLOGY SECTION

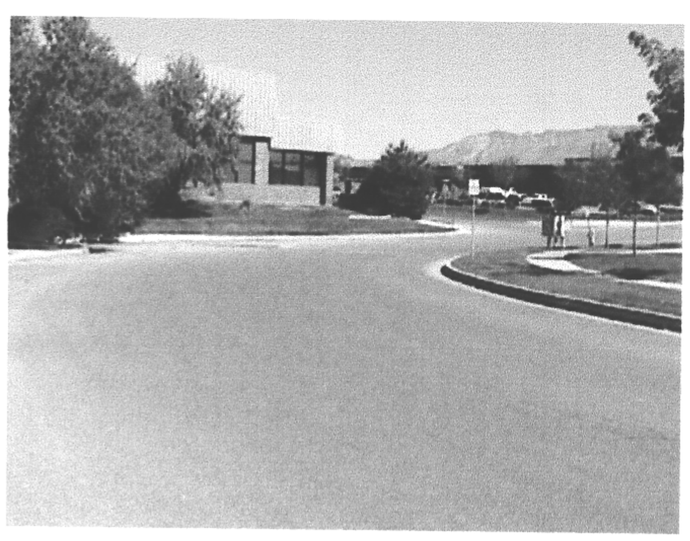
Commons Ave - West



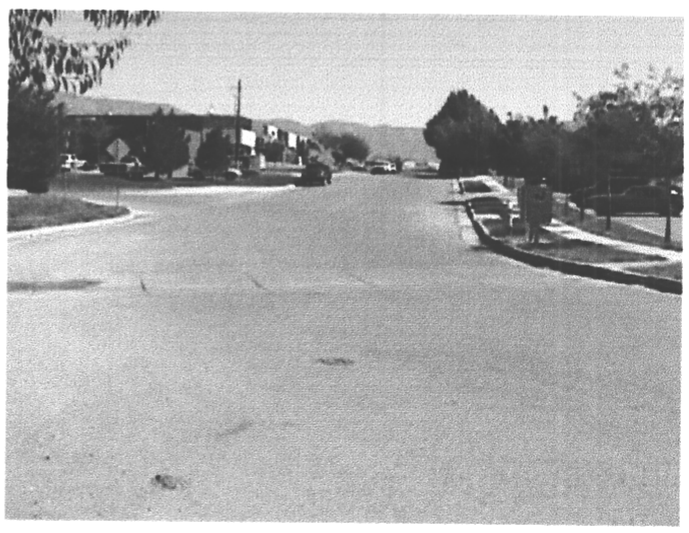
Channel entrance - West



Channel entrance - North



Dip section - North



Commons Ave - East

Channel entrance - West

Channel entrance - East

Channel entrance - West

EXHIBIT I

Basin 6A

AREA OF SITE: 197,921 SF = 4.54 Ac.

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

Existing Conditions

On-Site Existing Land Condition

Area a	=	0	SF
Area b	=	138,544	SF
Area c	=	59,376	SF
Area d	=	0	SF
Total Area	=	197,920	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=		SF
Area b	=	39,584	SF
Area c	=		SF
Area d	=	158,337	SF
Total Area	=	197,921	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53
Eb = 0.78
Ec = 1.13
Ed = 2.12

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

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

Existing E	=	0.89 in.		Developed E	=	1.85 in.

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

Existing V360	=	14597	CF	Developed V360	=	30546 CF

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

For Precipitation Zone 2

Qpa	=	1.56		Qpc	=	3.14
Qbb	=	2.28		Qpd	=	4.70
Existing Qp	=	11.5	CFS	Developed Qp	=	19.2 CFS

- 17.9 cfs proposed with TAS submittal

Basin 6A is located in the northern portion of the site Flows from this area drain to a dip section at the intersection of Office Blvd and Commons Ave. These flows combine with drainage from the Singer Blvd. Basin, which is comprised of Singer Blvd. and adjacent businesses situated along the north side of the street (See Aerial Map for basin definition). Total flow from the Singer Basin is 44.3 cfs, which, when combined with the developed Basin 6A flows, totals 63.5 cfs at the intersection of Office and Commons Ave. Adding the on-site flows from JC I, Basin B, of 30 cfs, total flow draining to the Commons Ave. rundown would be 93.5 cfs. The original drainage plan for the Commons Ave. rundown planned for a total flow of 67 cfs (Jefferson Commons, Phase I, Drainage Plan, Analysis Point B - Future). Because the Singer Basin and JC I, Basin B areas have been fully developed, total Q100 entering the rundown is presently 74 3 cfs from just these two areas, or 7 cfs in excess of the original design. This could be considered to be within an acceptable 10% variation of the accuracy of storm data without raising major concerns about possible flooding at the inlet to the rundown

However, based on the original design parameter's for the capacity of the downstream Commons Ave. drainage system, Basin 6A, JC II, will have to have some degree of detention ponding and controlled release to keep from adding to the flooding potential of the Commons Ave inlet to the rundown (See Photo #8 - Site Photos). A more detailed drainage analysis, based on as-built conditions of the street, dip section and rundown, should be completed to establish the actual capacity of the downstream system when any phase of Basin 6 is scheduled for development. - CHANNEL ANALYSIS REQ'D.

---

* FROM APPROVED MASTER DRAINAGE REPORT FOR JEFFERSON COMMONS II BASIN ~~B~~ 6A

Offsite Drainage Area
See Aerial Map

warehouse

1 story block building

1 story block building

warehouse

North

NTS

Singer Boulevard NE

Hi Pt

Jefferson Street NE

SS inlets

Office Boulevard NE

Commuter Avenue NE

Q=19

6A

6

5

OFFICE/LAB BLDG

FF=5134

Inlet #2C

Q=14

Inlet #2B

Q=6

12' wide landscape buffer corridor

Inlet #4A

Q=12

Q=5

Inlet #2A

Inlet #2

Q=6

4

Q=6

Inlet #4G

Q=6

Inlet #4F

Q=6

Inlet #4E

12' wide landscape buffer corridor

Q=6

Inlet #4D

1

Q=6

Inlet #4C

Q=6

Inlet #4B

RESTAURANT

Inlet #4

Q=12

2

30' wide perimeter landscape zone

Inlet #1

Q=15

Proposed SS

Existing SS

To Vineyard Channel

Inlet #3

Q=21

RESTAURANT

FF=5132

3

RESTAURANT

FF=5133

Office Boulevard NE

Frontage Road

Legend

Basin Bndry

Lot/Tract Bndry

Storm Sewer

Surface Flow

Q=21 Peak Flow Rate @ Pt. of Conc

3 Basin/Lot #

Basin Map

BASIN 6A - (SEE DRAINAGE REPORT)

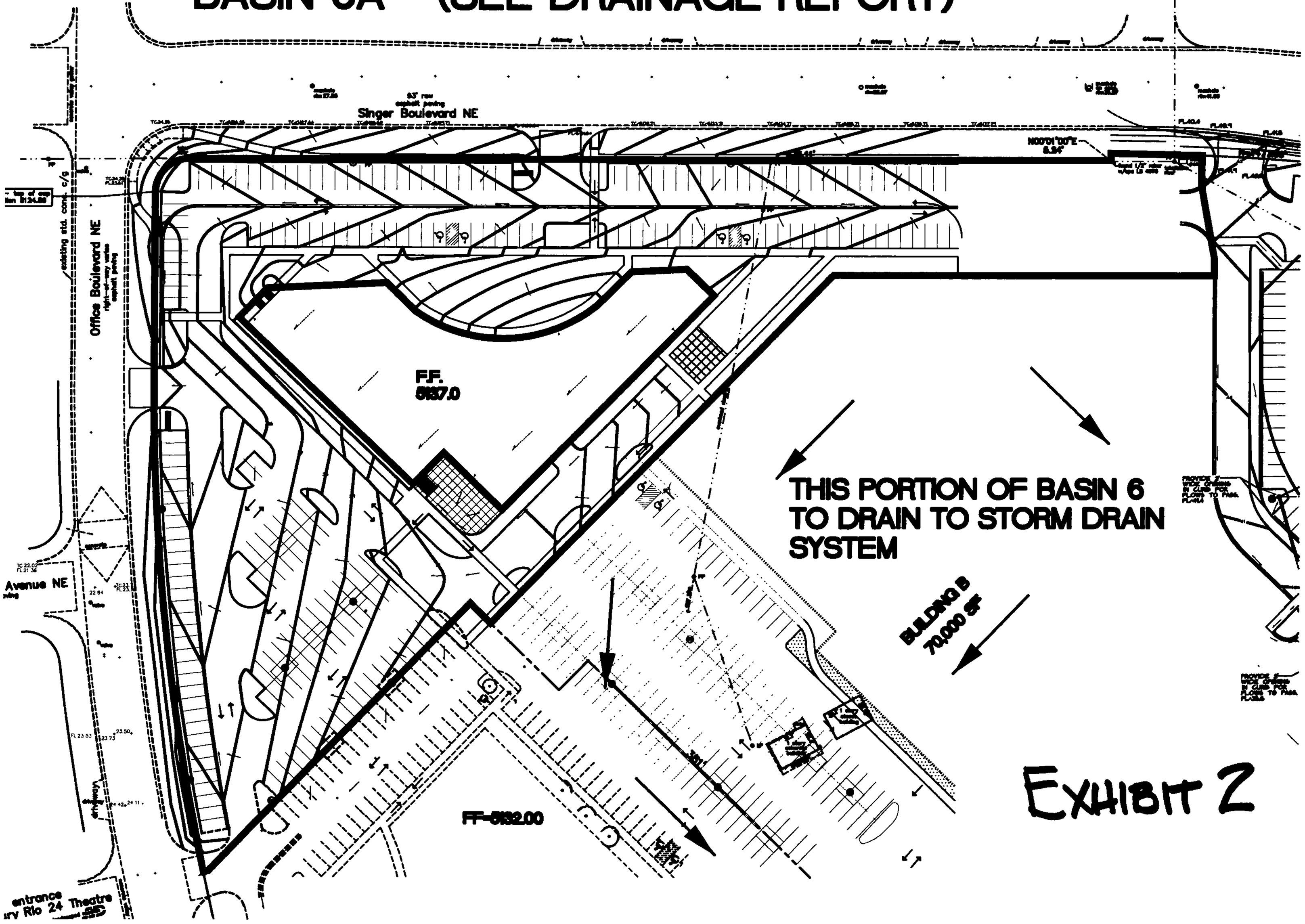


EXHIBIT 2

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 11, 2003

Christopher Weiss, P.E.
C.L. Weiss Engineering
P.O. Box 97
Albuquerque, NM 87047

Re: Jefferson Commons II – Lot 6 Building B, Certificate of Occupancy
Engineer's Stamp dated 7-22-03 (F17/D63)
Certification dated 12-11-03

Dear Mr. Weiss,

Based upon the information provided in your submittal received 10-31-03, the above referenced certification is approved for release of permenant Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: Phyllis Villanueva
file

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

F-17/063

BLOCK B, LOT 6A

PROJECT TITLE: JEFFERSON COMMONS — ZONE MAP/DRG. FILE #:
DRB #: — EPC#: — WORK ORDER#:

LEGAL DESCRIPTION: LOT 6A JEFFERSON COMMONS
CITY ADDRESS: 5421 JEFFERSON NE

ENGINEERING FIRM: C.L. Weiss Engineering — CONTACT: Christopher Weiss
ADDRESS: P.O. Box 97 — PHONE:
CITY, STATE: ALB, NM — ZIP CODE: 87047

OWNER: CHANT ASSOCIATES — CONTACT:
ADDRESS: — PHONE:
CITY, STATE: ALB NM — ZIP CODE:

ARCHITECT: BERENT GROTH AIA — CONTACT:
ADDRESS: 1100 ALVARADO NE — PHONE: 266 6700
CITY, STATE: ALB. NM. 87110 — ZIP CODE:

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

CONTRACTOR: CHANT ASSOCIATES — CONTACT:
ADDRESS: — PHONE:
CITY, STATE: — ZIP CODE:

CHECK TYPE OF SUBMITTAL:

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

CHECK TYPE OF APPROVAL SOUGHT:

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

RECEIVED
DEC 11 2003
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED

- ____ YES
- ____ NO
- ____ COPY PROVIDED

DATE SUBMITTED 12/11/03 BY BCK

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal the particular nature , location and scope ot the proposed development defines the degree of drainage detail One or more of the following levels of submittal may be required based on the following:

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

I, Christopher L. Weiss. NMPE 6653 of C.L. Weiss Engineering, Inc. hereby certify that this project (Bldg. B) has been graded and will drain in substantial compliance with and in accordance with the design intent of the approved plan dated 7-22-03. The record information edited onto the original design document has been obtained by Ron Forstbauer, NMPS 6126, of the firm Forstbauer Surveying Co. I further certify that I or a member of my staff have personally visited the project site on 10-30-03 and have determined by visual inspection that the survey data provided is representative of actual site conditions and is true and correct to the best of my knowledge and belief. This certification is submitted in support of a request for Certificate of Occupancy.

AREAS OF MODIFICATION BETWEEN APPROVED DRAINAGE GRADING PLAN AND ACTUAL AS-BUILT

1 Dock addition this area - OK
2 No curb and gutter constructed at property line - OK (see 'A' below)

AREAS OF CLARIFICATION

A. Parking lot flows pass into adjacent property (same owner) valley gutter and are directed to existing private storm drain per Document No. 97060659, filed June 16, 1997 in Book 97-16, Pages 2411-2424A Cross Drainage Easement.

The record information presented hereon is not necessarily complete and intended only to verify substantial compliance of the grading and drainage aspects of this project. Those relying on this record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

12-11-03

Christopher L. Weiss, NMPE 6653

CHRISTOPHER L. WEISS NEW MEXICO 6653 REGISTERED PROFESSIONAL ENGINEER

Weiss Engineering

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

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

December 11, 2003

Mr. Bradley Bingham
Hydrology Division
City of Albuquerque

RE: JEFFERSON COMMONS II – LOT 6 - BUILDING B GRADING AND DRAINAGE PLAN (F17/D63)

Dear Mr. Bingham,

Faxed with this letter is the final Engineer's Certification for the above referenced property. Based on site inspection and surveyed as-built information, the site is in substantial compliance with the approved Drainage and Grading Plan dated 7-22-03.

The exception is the elimination of curb and gutter along the south property line. Due to this change, parking lot flows pass into the adjacent property (same owner) valley gutter and are directed to the existing private master storm drain. This is permitted based on an existing Cross-Easement Agreement - Document No. 97060659, filed June 16, 1997 in Book 97-16, Pages 2411-2424A.

Per the approved Drainage and Grading Plan, these flows were also directed to this same storm drain inlet. The inlet is in a sump (approx. 1' deep) and has ample capacity to accept this additional surface flow.

We would appreciate your final sign-off for C.O. Please don't hesitate to call me at 266-3444 or Chris Weiss at 281-1800 with any questions or comments.

Sincerely,

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

A Fax from C.L. Weiss Engineering, Inc. **329**

C.L.WEISS ENGINEERING. INC.
Post Office Box 97 * Sandia Park, NM 87047
Phone / Fax (505) 281-1800
1100 Alvarado Dr. NE * Albuquerque, NM 87110
Phone / Fax (505) 266-3444

Date: 12/11/2003

Number of pages including cover sheet: 3

To:	Mr. Brad Bingham
	COA Hydrology
Phone:	924-3986
Fax:	924-3864

From:	**C.L. Weiss Engineering, Inc.**	
	☒ **Chris Weiss @ Sandia Park**	☒ **Bryan Bobrick @ Albuquerque**
Phone:	**<505> 281-1800**	**<505> 266-3444**
Fax:	**<505> 281-1800**	**<505> 266-3444**

○ **Urgent** ○ **Information Request** ○ **Reply ASAP** ● **For Your Use** ○ **Top Secret** ○ **Other**

Brad,

Here is a copy of the final Engineer's Certification for Jefferson Commons Lot 6a - Building B (F17/D63).

You previously signed off for a temporary CO. We have resolved the issue of cross-lot drainage and they are ready for the Final CO. Please let me know if you need anything else.

Thanks

Bryan Bobrick
C.L. Weiss Engineering, Inc.

Signed: Bryan Bobrick

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 29, 1999

Chris Weiss, PE
C.L. Weiss Engineering, Inc.
PO Box 97
Sandia Park, NM 87047

Re: Jefferson Commons II – Lot 6A Grading and Drainage Plan
Engineer's Stamp dated 12-2-99, (F17/D6)

Dear Mr. Weiss,

Based on your submittal dated 11-04-99, you are conditionally approved for Building Permit contingent upon approved Work Order for the Jefferson Channel. You are approved for Rough Grading. Until the channel improvements are in place, no paving can be done. Erosion control devises will be required in the interim.

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

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

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Hydrology Review Engineer

C: Larry Caudell COA
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

SECOND JUDICIAL DISTRICT
COUNTY OF BERNALILLO
STATE OF NEW MEXICO

No. CV 85-09414

RECEIVED
SEP 15 1989
HYDROLOGY SECTION

ENDORSED
FILED IN MY OFFICE THIS
JAN 3 1989
Thomas F. Ruiz
Susie A. Crabtree
CLERK DISTRICT COURT

STATE OF NEW MEXICO, ex rel.
STATE HIGHWAY DEPARTMENT OF
NEW MEXICO,

Petitioner,

v.

DIGITAL EQUIPMENT CORPORATION,
et al.,

Defendants.

SETTLEMENT AGREEMENT

THIS AGREEMENT entered into this 7th day of October, 1988, by and between the STATE OF NEW MEXICO, ex rel. STATE HIGHWAY AND TRANSPORTATION DEPARTMENT (hereinafter referred to as "SHD"), the CITY OF ALBUQUERQUE (hereinafter referred to as "City"), and DIGITAL EQUIPMENT CORPORATION (hereinafter referred to as "DEC"), and for valuable consideration, the parties do hereby enter into this accord and satisfaction for full and complete settlement of all claims, causes and choses in action arising out of STATE OF NEW MEXICO, ex rel. STATE HIGHWAY DEPARTMENT OF NEW MEXICO V. DIGITAL EQUIPMENT CORPORATION, et al., Bernalillo County District Court No. CV 85-09414 for eminent domain, to-wit:

1. COMPENSATION FOR EMINENT DOMAIN. SHD will pay to DEC and the CITY the total sum of SEVEN HUNDRED TWENTY SIX

THOUSAND EIGHT HUNDRED AND TWENTY-FIVE AND 02/100 DOLLARS ($726,825.02), less all proceeds paid into the Court Registry, as full and complete compensation for all real property acquired pursuant to the above-referenced eminent domain proceeding. The real property acquired by SHD from DEC and the CITY is identified as Tracts 11-1, 11B-1, 12-1, 11-TCP-1, 11-TCP-2, 11B-TCP-1 all of which are more fully described in Exhibit "A" attached hereto. DEC and the CITY agree to apply that portion of the settlement proceeds to retire the Industrial Revenue Bonds attributable to Lot A of the Albuquerque Industrial Park (replat filed October 21, 1976), according to the terms and conditions of the Singer Lease Agreement dated November 18, 1969 and the Trust Indenture Agreement, dated September 1, 1969, with all amendments, additions and modifications. SHD will prepare the necessary documentation for disposing of the above-referenced cause.

2. AVOIDANCE OF SEVERANCE DAMAGE. SHD shall convey merchantable, fee simple absolute title of Parcel Number 1 and Parcel Number 2 to DEC by quitclaim deed, subject only to a reservation of a utility easement for the CITY and other public utilities. SHD will provide assurances to the title company for title insurance. The settlement is contingent upon the acquisition of title insurance as set forth herein. The purpose of these conveyances is to avoid severance damage to DEC property described as the Broja

Trust, Tract A, plat filed October 28, 1976, located south of Singer Boulevard right-of-way. Parcel Number 1 is that segment of vacated Singer Boulevard between I-25 on the east and Jefferson Street on the west totalling 54,164.21 square feet. Parcel Number 2 is that segment of Singer Boulevard located in the northwest corner of the Broja Trust, Tract A, intersecting Jefferson Street totalling 32,423.28 square feet. SHD will deliver quitclaim deeds for Parcel Number 1 and Parcel Number 2 to DEC within a reasonable time after the execution of this agreement. DEC will purchase title insurance in the face amount of $108,328 for Parcel Number 1 and $64,846 for Parcel Number 2, subject only to a public utilities easement, whether private or municipally owned, and under a certificate of survey insuring the boundaries of the subject parcels, and SHD will reimburse DEC for the cost of all title insurance. The easement shall no longer remain open for public ingress or egress. The ATLA Standard Owners Title Insurance Policy shall contain no boundary exclusions under Schedule B(3). Title Insurance shall be issued at closing by First American Title Company. Time is of the essence for performance of this settlement agreement. Conveyance of Parcel #1 and Parcel #2 is contingent upon approval by the State Highway Commission and the Department of Finance and Administration.

3. <u>REPLAT AND SURVEY OF PARCELS NUMBERS 1 AND 2</u>. DEC will obtain, at its cost, a replat and certificate of

survey for the Broja Trust Tract A and the Albuquerque Industrial Park, containing boundaries acceptable to DEC and SHD. SHD will reimburse DEC FIFTEEN THOUSAND FOUR HUNDRED TWENTY-FIVE AND NO/100 DOLLARS ($15,425.00) for replatting costs. The certificate of survey shall show all existing easements and identify the location of utilities within Parcels 1 and 2. The certificate of survey will evidence the square footage of Parcel 1 and Parcel 2. In the event that the square footage for Parcel Number 1 is less than 54,164 square feet or the square footage for Parcel Number 2 is less than 32,423 square feet, SHD shall increase the compensation paid under Paragraph 1 above, by the sum of $2.00 per square foot for each square foot under 54,164 and 32,423 for Parcels 1 and 2, respectively. In no event will the compensation set forth in Paragraph 1 above be decreased should Parcels 1 and 2 contain more square footage than 54,164 and 32,423. This settlement is contingent upon receiving a letter from the CITY and other public entities authorizing movement of the utilities identified by the survey to the exterior boundary line of DEC's property, understanding that the cost associated with physically moving the utilities in the event of development, would be borne by DEC.

4. DRAINAGE RESOLUTION. SHD does hereby agree to construct a drainage culvert along the northern boundary and the eastern boundary of the Broja Trust, Tract "A", of adequate size and design to transport all water and drainage

from Jefferson Street and I-25 to the south of the Broja Trust, Tract A. DEC agrees to have the drainage easement surveyed and platted. SHD will reimburse DEC for the cost of the drainage easement survey and replatting. The drainage easement and plat are subject to review and approval by the CITY. SHD will provide all drainage reports and its drainage engineers for satisfactory approval of the drainage easement. As a condition subsequent, this agreement is subject to the approval of the drainage easement and replat by the CITY. DEC will convey an easement to SHD at no cost to SHD. SHD will construct and maintain a drainage culvert at no cost to DEC or the CITY. The drainage easement and required maintenance shall continue so long as the drainage culvert shall exist. If the need for the easement no longer exists, SHD shall, upon request, release the easement to DEC, its successors and assigns.

SHD will prepare a standard form easement document consistent with the survey description. DEC will grant a drainage easement to SHD providing in pertinent part that the SHD be wholly and completely responsible for the design, maintenance, construction and repair of the drainage culvert to include all actions or omissions of SHD. The drainage culvert shall be of reasonably adequate design, construction, and capacity to carry all run-off around the DEC property and to reasonably avoid flooding of the DEC property. SHD agrees to provide timely maintenance and repair of the drainage culvert. Any and all damage to property or personal injury caused by the drainage easement, to include all consequential

damages, costs, fees or costs associated with enforcement of the drainage easement shall be the complete and total responsibility of SHD.

Neither DEC nor the CITY shall be responsible or liable for the design, maintenance, construction or the repair of the drainage culvert or the easement. Neither DEC nor the CITY shall be responsible for any damage whatsoever caused by the design, maintenance, construction or repair of the drainage culvert, to include no responsibility for damage to property, damage to persons, consequential damages, costs, fees or other costs associated with the enforcement of the drainage easement. The easement language shall include these provisions.

The replat of the Broja Trust Tract, shall include the easement to be conveyed by DEC to SHD. The drainage plan and replat shall be subject to approval by the CITY and all related public entities, provided that the approved drainage plan will not inhibit the ability of DEC to develop, build upon, and improve the Broja Tract without ponding and without adverse affect from the drainage easement. All parties clearly understand that this Settlement Agreement in no way commits the CITY to approval of a particular drainage plan or to approval of any replat. All applications for replatting or other approvals will be handled according to normal procedures without regard to the CITY's participation in this Settlement Agreement.

5. DUE DILIGENCE CLAUSE AND MERGER CLAUSE. The parties agree to execute all other documents necessary to fully carry out the intent and purpose of this agreement. Each party agrees to use best efforts and due diligence in the furtherance of this agreement. This agreement is the entire agreement of the parties. This agreement is specifically enforceable in a New Mexico Court of general jurisdiction. The CITY shall allow the parties reasonable time from the execution of this agreement for surveying and replatting of the property involved.

BY THEIR AUTHORIZED SIGNATURES, THE UNDERSIGNED PRINCIPALS DO HEREBY AGREE TO THE TERMS AND CONDITIONS OF THIS SETTLEMENT AGREEMENT.

APPROVED BY:

STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

By _____
Hugh Parry
Special Assistant Attorney General

HINKLE, COX, EATON, COFFIELD & HENSLEY

By _____
Mark C. Dow
Attorney for Digital Equipment Corporation

THE CITY OF ALBUQUERQUE

By _____
Edward R. Pearson
Assistant City Attorney

(11-1) A certain tract or parcel of land lying and being situate within La Merced De Elena Gallegos, and within Tract "A" of the lands of Broja Trust, City of Albuquerque, plat having been filed in the Office of the County Clerk, on October 28, 1976, County of Bernalillo, State of New Mexico, being more particularly bounded and described as follows, to wit:

Beginning at a point 165 feet to the left of and opposite Survey Centerline Station 255+50 of NMP UI-025-4(52)228, County of Bernalillo, State of New Mexico, and point on the present (1984) westerly right of way line of NMP I-025-4(21)225, county of Bernalillo, State of New Mexico, also being a point on the westerly right of way and access control line of said NMP UI-025-4(52)228; thence N.44°08'49"E., along the said westerly right of way and access control line of NMP UI-025-4(52)228 a distance of 456.21 feet; thence N.32°32'32"E., a distance of 398.77 feet; thence N.48°36'33.2"E., a distance of 73.69 feet; thence N.31°37'09.2"W., a distance of 335.88 feet to a point of curve; thence northwesterly on an 8.308° curve (radius = 689.62 feet, chord = 281.35 feet, N.19°50'56.4"W.) thru an arc of 23°32'26" to the right a distance of 283.34 feet to a point of compound curve; thence northwesterly on a 6.574° curve (radius = 871.51 feet, chord = 43.296 feet, N.6°39'19.5"W.) thru an arc of 2°50'48" to the right a distance of 43.30 feet to a point on the southerly right of way line of Singer Boulevard; thence S.60°58'E., along said southerly right of way line a distance of 133.05 feet to a point on the northerly right of way line of said NMP UI-025-4(52)228, point on curve; thence southeasterly along the said northerly right of way line on a 9.817° curve (radius = 583.62 feet, chord = 131.47 feet, S.18°10'48.4"E.) thru an arc of 12°56'03" to the left a distance of 131.75 feet; thence S.44°43'27.9"E., a

distance of 382.74 feet; thence S.66°01'19"E., a distance of 382.74 feet; thence S.66°01'19"E., a distance of 25.75 feet to a point on the said southerly right of way line of Singer Boulevard; thence S.36°23'27"E., along said southerly right of way line a distance of 169.81 feet to a point of curve; thence southwesterly on a 114.592° curve (radius = 50.0 feet, chord = 70.71 feet, S.8°36'33.2"W.) thru an arc of 90°00' to the right a distance of 78.54 feet to a point on the said present (1984) westerly right of way line of NMP I-025-4(21)225; thence S.53°36'33.2"W., along the said present westerly right of way line a distance of 1057.49 feet to the point and place of beginning.

Containing 5.000 acres (217,790 square feet), more or less.

ACCESS CONTROLLED. WITH ACCESS.

ALSO:

(11B-1) A certain tract or parcel of land lying and being situate within Lot A of the Albuquerque Industrial Park, City of Albuquerque, plat having been filed in the office of the County Clerk on October 21, 1976, County of Bernalillo, State of New Mexico, being more particularly bounded and described as follows, to wit:

Beginning at a point 53.0 feet to the right of, easterly and opposite P.T. Station 65+13.33 of Jefferson Street (Kircher Boulevard) NMP UI-025-4(52)228, County of Bernalillo, State of New Mexico, and point on curve; thence southwesterly on a 7.485° curve (radius = 765.51 feet, chord = 383.57 feet, S.14°27'32"W.) thru an arc of 29°01'06" to the left a distance of 387.70 feet to a point on the present (1984) northerly right of way line of Singer Boulevard, NMP UI-025-4(52)228; thence N.61°01'54"W. along the said present (1984) northerly right of way line of

Singer Boulevard a distance of 46.10 feet to a point on curve; thence northeasterly on a 114.592° curve (radius = 50.0 feet, chord = 70.71 feet, N.16°01'55"W.) thru an arc of 90°00' to the right a distance of 78.54 feet to a point on the present (1984) easterly right of way line of Jefferson Street (Kircher Boulevard) NMP UI-025-4(52)228; thence N.28°58'05"E. along the said present (1984) easterly right of way line of Jefferson Street (Kircher Boulevard) a distance of 321.34 feet to the point and place of beginning. Containing 11,043 square feet (0.254 of an acre), more or less.

NOT ACCESS CONTROLLED.

ALSO:

(11B-TCP-1) A certain tract or parcel of land lying and being situate within Lot A of the Albuquerque Industrial Park, City of Albuquerque, plat having been filed in the Office of the County Clerk, on October 21, 1976, County of Bernalillo, State of New Mexico, being more particularly bounded and described as follows, to wit:

Beginning at a point 53 feet to the right of, easterly and opposite P.T. Station 65+13.33 of Jefferson Street, (Kircher Boulevard), NMP UI-025-4(52)228, County of Bernalillo, State of New Mexico; thence S.61°01'55"E., a distance of 10.0 feet to a point of curve; thence southwesterly on a 7.584° curve (radius = 755.51 feet, chord = 216.76 feet, S.20°43'14"W.) thru an arc of 16°29'43" to the left a distance of 217.51 feet to a point on curve; thence southeasterly on a 8.345° curve (radius = 686.62 feet, chord = 174.58 feet, S.68°23'45"E.) thru an arc of 14°36'27" to the right a distance of 175.05 feet to a point of tangent; thence S.61°05'32"E., a distance of 7.78 feet; thence S.28°54'28"W., a distance of 100.0 feet; thence N.61°05'32"W., a distance of

7.78 feet to a point of curve; thence northwesterly on a 9.767° curve (radius = 586.62 feet, chord = 139.34 feet, N.67°54'46"W.) thru an arc of 13°38'29" to the left a distance of 139.67 feet to a point of curve; thence southwesterly on a 7.584° curve (radius = 755.51 feet, S.2°11'03"W.) thru an arc of 5°81'42" to the left a distance of 70.04 feet, thence N.61°01'55"W., a distance of 11.46 feet to a point on curve; thence northeasterly on a 7.485° curve (radius = 765.51 feet, chord = 383.57 feet, N.14°27'32"E.) thru an arc of 29°01'06" to the right a distance of 387.70 feet to the point and place of beginning.

Containing 20,506 square feet, (0.471 of an acre), more or less.

ALSO:

(11-TCP-1) A certain tract or parcel of land lying and being situate within Tract "A" of The Lands of Broja Trust, plat having been filed in the Office of the County Clerk on October 28, 1976, County of Bernalillo, State of New Mexico, being more particularly bounded and described as follows, to wit:

Beginning at a point 100 feet to the left of, westerly and opposite Centerline Station 54+00.0 of Jefferson Street (Kircher Boulevard) of NMP UI-025-4(52)228, County of Bernalillo, State of New Mexico; thence S.48°36'33"W., a distance of 30.44 feet; thence N.31°37'09"W., a distance of 341.04 feet to a point of curve; thence northwesterly on a 7.962° curve (radius = 719.62 feet, chord = 293.59 feet, N.19°50'56"W.) thru an arc of 23°32'26" to the right a distance of 295.66 feet to a point of compound curve; thence northwesterly on a 6.355° curve (radius = 901.51 feet, chord = 65.06 feet, N.6°00'39"W.) thru an arc of 4°08'09" to the right a distance of 65.08 feet to a point on the present (1984)

southerly right of way line of Singer Boulevard, NMP UI-025-4(52)228; thence S.61°14'27"E., along the said present (1984) southerly right of way line of Singer Blvd., a distance of 36.02 feet to a point of curve; thence southeasterly on a 6.574° curve (radius = 871.51 feet, chord = 43.29 feet, S.6°39'20"E.) thru an arc of 2°50'48" to the left a distance of 43.30 feet to a point of compound curve; thence southeasterly on a 8.308° curve (radius = 689.62 feet, chord = 281.35, S.19°50'56"E.) thru an arc of 23°32'26" to the left a distance of 283.34 feet to a point of tangent; thence S.31°37'09"E., a distance of 335.88 feet to the point and place of beginning.

Containing 20,465 square feet, (0.470 of an acre), more or less.

ALSO:

(11-TCP-2) A certain tract or parcel of land lying and being situate within Tract "A" of the Lands of Broja Trust, City of Albuquerque, plat having been filed in the Office of the County Clerk on October 28, 1976, County of Bernalillo, State of New Mexico, being more particularly bounded and described as follows, to wit:

Beginning at a point 53 feet to the right of, easterly and opposite centerline Station 58+00 of Jefferson Street, NMP UI-025-4(52)228, County of Bernalillo, State of New Mexico, and point on curve; thence northwesterly on a 9.817° curve (radius = 583.62 feet, chord = 131.47 feet, N.18°10'48"W.) thru an arc of 12°56'03" to the right a distance of 131.75 feet to a point on the present (1984) southerly right of way line of Singer Boulevard NMP UI-025-4(52)228; thence S.60°58'E. along the said present (1984) southerly right of way line of Singer Boulevard a distance of 13.29 feet to a point on curve; thence southeasterly on a 9.988° curve (radius = 573.62 feet,

chord = 149.83 feet, S.20°05'01"E.) thru an arc of 15°'0'30" to the left a distance of 150.26 feet to a point on the easterly right of way line of Jefferson Street, NMP UI-025-4(52)228; thence N.44°43'28"W. along the said easterly right of way line of Jefferson Street a distance of 31.33 feet to the point and place of beginning.

Containing 1,406 square feet (0.032 of an acre), more or less.

ALSO:

(12-1) A certain tract or parcel of land lying and being situate within the La Merced De Elena Gallegos, and within Lot "A" of the Albuquerque Industrial Park, replat of said park having been filed in the Office of the County Clerk, on October 21, 1976, County of Bernalillo, State of New Mexico, being more particularly bounded and described as follows, to wit:

Beginning at a point 164.92 feet to the left of and opposite Survey Centerline Station 267+88.30 of NMP UI-025-4(52)228, County of Bernalillo, State of New Mexico, and point on the present (1984) westerly right of way line of NMP I-025-4(21)225 and NMP I-025-4(17)226, County of Bernalillo, State of New Mexico; thence N.53°35'29"E., along the said present (1984) westerly right of way line a distance of 268.20 feet to a point of curve; thence northeasterly on a 1.568° curve (radius = 3654.52 feet) thru an arc of 2°00' to the left a distance of 127.55 feet; thence N.38°23'26.8"W., a distance of 28.50 feet to a point on curve; thence northeasterly on a 2.145° curve (radius = 2671.29 feet) thru an arc of 4°35'41" to the left a distance of 214.22 feet; thence S.42°59'12.8"E., a distance of 28.50 feet to a point on curve; thence northeasterly on a 2.122° curve (radius = 2699.79 feet) thru an arc of 5°55'21" to the left a distance of 279.08 feet to a point on the westerly right of way and access control

line of said NMP UI-025-4(52)228 said point being 165.00 to the left of and opposite Survey Centerline Station 277+15 of said NMP UI-025-4(52)228; thence S.50°17'19.8"W., along the said westerly right of way and access control line of UI-025-4(52)228 a distance of 279.13 feet; thence S.57°45'30.7"W., a distance of 215.15 feet; thence S.70°08'19.8"W., a distance of 462.66 feet to a point on the northerly right of way line of Singer Boulevard; thence S.36°23'26.9"E., along the said northerly right of way line a distance of 145.86 feet to a point of curve; thence northeasterly on a 114.59° curve (radius = 50 feet) thru an arc of 90°00' to the left a distance of 78.54 feet to the point and place of beginning.

Containing 1.507 acres, (65,648 square feet), more or less.

ACCESS CONTROLLED. NO ACCESS.

CALCULATIONS:

Calculations are based on the Drainage Design Criteria for City of Albuquerque, Section 22.2, DPM, Vol 2, dated Jan., 1993

ON-SITE

AREA OF SITE: 178800 SF = 4.1 Ac.

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	26841	SF
Area c	=	0	SF
Area d	=	151959	SF
Total Area	=	178800	SF

EXCESS PRECIPITATION:

Precip. Zone 2

Ea = 0.53

Eb = 0.78

Ec = 1.13

Ed = 2.12

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

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

Developed E = 1.92 in.

On-Site Volume of Runoff: V360 = E*A / 12

Developed V360 = 28591 CF

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

For Precipitation Zone 2

Qpa	=	1.56	Qpc	=	3.14
Qbb	=	2.28	Qpd	=	4.70

Developed Qp = 17.8 CFS

to be released directly into the Jefferson Commons Phase II private storm drain system. Refer to the Drainage Management Plan for Jefferson Commons Phase II for additional information.

RECEIVED
DEC 17 1997
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Planning Department
Transportation Development Services Section

December 11, 2003

Berent Groth, Registered Architect
1100 Alvarado NE
Albuquerque, NM 87110

Re: Certification Submittal for Final Building Certificate of Occupancy for
Jefferson Commons Phase Two, Bldg B,lot 6A, [F-17 / D63]
5421 Jefferson NE
Architect's Stamp Dated 12/11/03

Dear Mr. Groth:

The TCL / Letter of Certification submitted on December 11, 2003 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

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

c: Engineer
Hydrology file
CO Clerk

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

April 22, 2005

Brent Groth, Registered Architect
3546 Sequoia Place NW
Albuquerque, NM 87120

Re: Certification Submittal for Final Building Certificate of Occupancy for
Chant Bldg C(Jefferson Commons Lot 6), [F-17 / D63]
5411 Jefferson NE
Architect's Stamp Dated 04/20/05

Dear Mr. Groth:

The TCL / Letter of Certification submitted on April 22, 2005 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

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

c: Engineer
Hydrology file
CO Clerk

Arlene:
Please log in & log
thanks
Fr. t3
It's a re-submittal

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

BERENT GROTH ARCHITECT AIA

3546 SEQUOIA PLACE NW ALBUQUERQUE NEW MEXICO 87120
e-mail: bgrothaia@aol.com
phone: (505) 266 6700
fax: (505) 836 6461

Mr. Nilo Salgado-Fernandez, P.E.
Transportation Department
City of Albuquerque

Re: Final Certificate of Occupancy Bldg C, 5411 Jefferson NE, Lot 6 Jefferson Commons
DRB Case No. DRB-97-366
DRB Case No. 03DRB-00206

April 20, 2005

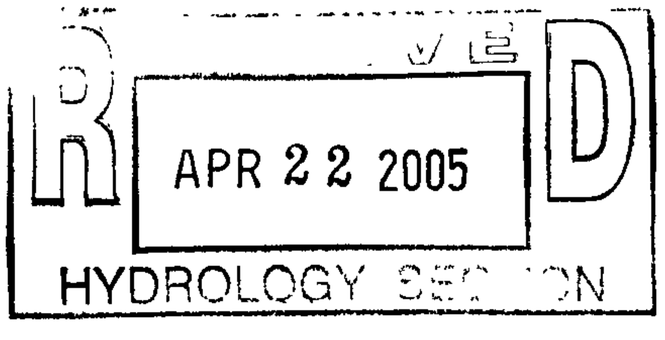
Dear Sir,

On April 6, 2005 I inspected site improvements on Lot 6, Jefferson Commons, specifically 5411 Jefferson NE. I found these to be in substantial compliance with approved plans under DRB Case number DRB-97-366 as revised by 03DRB-00206, attached.

Very truly yours,

Berent Groth, Architect
NM Reg. No. 958

CC: Chant Associates



R WARD HUNNICUTT, CHAIRMAN
PAT D HIGDON, VICE-CHAIRMAN
DANIEL W COOK, SECRETARY-TREASURER
REX FUNK, DIRECTOR
RONALD D BROWN, DIRECTOR

LARRY A BLAIR
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N E - ALBUQUERQUE, N M 87107
TELEPHONE (505) 884-2215

RECEIVED
SEP 24 1990
HYDROLOGY DIVISION

September 19, 1990

Gilbert Aldaz, PE & LS
City/County Floodplain Administrator
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

RE: Vineyard Arroyo Drainage Channel plans for I-25 West Frontage Road and Office Boulevard (F-17)

Dear Gilbert:

We have received copies of correspondence from your office regarding the above referenced project, dated February 20, 1990 and May 24, 1990. We understand that final plans for the Vineyard Arroyo above Office Boulevard are being prepared by the State Highway Department and that the plans are to be reviewed and approved by your office. The plans are intended to remove the adjacent private property from the 100-year flood zone designation and will serve as the basis for drainage system development at the private property.

AMAFCA anticipates that we will be an active participant in the review of final plans for this project. Elements of special concern to us include:

- Design hydrology
- Channel capacity and freeboard
- Design of channel bends and transition structures
- Capacity of downstream facilities
- Location and site of side lets to serve private property

FICE F-17/063

We have had the opportunity to see preliminary design drawings for the portion of the arroyo above Office Boulevard. We have particular concern about the hydraulic capacity and function of the culvert crossings under Office Boulevard, the downstream channel transition adjacent to the Albuquerque 6 Drive-In Theater, and the 90 degree channel bend at the corner of Office Boulevard and the west Frontage Road.

Please keep us informed of the project so that we can provide a timely review.

Sincerely,

for Clifford E. Anderson, PE & LS
Drainage Engineer

copies to:
Ms. Rae A. Van Hoven, NM State Highway Dept, Drainage Section
Fred Aguirre, Hydrologist, City of Albuq. Public Works Dept.
Dan Hogan, Division Mgr, Hydrology Dev. Div., Public Works Dept.

KEN SCHULTZ
MAYOR

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 18, 1989

Ms. Rae A. Van Hoven
State Highway Department
Drainage Section
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

RE: DRAINAGE PLAN FOR WEST FRONTAGE ROAD WEST CHANNEL & OFFICE BOULEVARD NORTH CHANNEL

Dear Ms. Van Hoven:

I have reviewed the referenced submittal and forward the following comments:

1. Attached you will find a 1987 photo of the area. I have roughly drawn in the drainage basins as shown on Sheet 4 of 5 of your report. The report indicates that you used a residential CN value of 75 for 50% of the area. The photo shows that the area is a business and industrial area.

2. Please address freeboard for the channels and drop structures.

3. Station 7+00 shows wire enclosed riprap downstream of the drop structure. Will all of the drop structures have wire enclosed riprap downstream of the drop structure?

4. Please show a typical drop structure with the rebar design.

5. Please address how the cut off wall lengths were determined. Our DPM requires a greater depth.

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER

6. Please show more details at the following locations.

   A. At the culverts outfalls into the drop structures.
   B. At the 90 degree turn at the outfall of the 3 - 36 inch RCPs.
   C. At the 90 degree turn at the 2 - 60 inch CMPs.
   D. At the combination of the 1-48 inch RCP and the 1 - 36 inch storm drain.

7. The City of Albuquerque uses a 6 hour 100 year storm and the NOAA atlas rainfall values. I wanted to check your peak discharges by using your input data with our methods. The first difference was the CN value as discussed in my first comment. The second difference was the rainfall value. The City uses NOAA atlas rainfall values and I have included the 100 year 24 hour value. I checked the final runoff value at the 2 - 60 inch CMP's on page 4 of the calculations. Your value was 254 cfs. Attached you will find my calculations using the Rational Method and TR-55. My calculations indicate that the runoff is 574 and 475 cfs. The values are too far apart from the 254 cfs to accept your discharge. Please contact us if you want to discuss our methods of determining discharges.

8. Please show a rip rap design for the drop structures.

9. Please use the SC5 TR-55 figure 7-2 (allowable velocities for Unprotected Earth Channels) to determine velocities over the unprotected channel.

10. Other accepted methods to determine velocities can also be used.

11. Will the 2 - 60 inch CMP's backup the 100 year floodplain into the subject site?

If you should have any questions regarding these comments, please call me at 768-3961.

Cordially,

Carlos A. Montoya, P.E.
Civil Engineer

Enclosures

CAM/bsj
(WP+1293)

TR-55 Graphical Peak Discharge

Drainage area. 309 Ac. = 0.48 mi²

CN = 90

T.c. = 0.5 hrs

Rainfall Dist. II

Frequency = 100 year

Rainfall, P (24 hr) = 2.8 in

Table 4-1

CN = 90 ⟹ I_a = 0.222

Figure 4-1

Rainfall = 2.8 in ⟹ I_a/P = 0.08

NOAA ATLAS RAINFALL P = 2.8

UNIT PEAK DISCHARGE q_u CSM/IN

T_C = 0.5 hrs $\frac{I_a}{P}$ = 0.08 ⟹ Exhibit 4-II

q_u = 550 CSM/IN

Figure 2-1

Runoff Q ⟹ 1.8 in direct R.O.

PEAK Discharge $q_p = q_u A_m Q$

$q_p = (550)(0.48)(1.8) = \underline{475 \text{ cfs}}$

Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5] USE 2.2"		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).		0.90	1.03"		

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

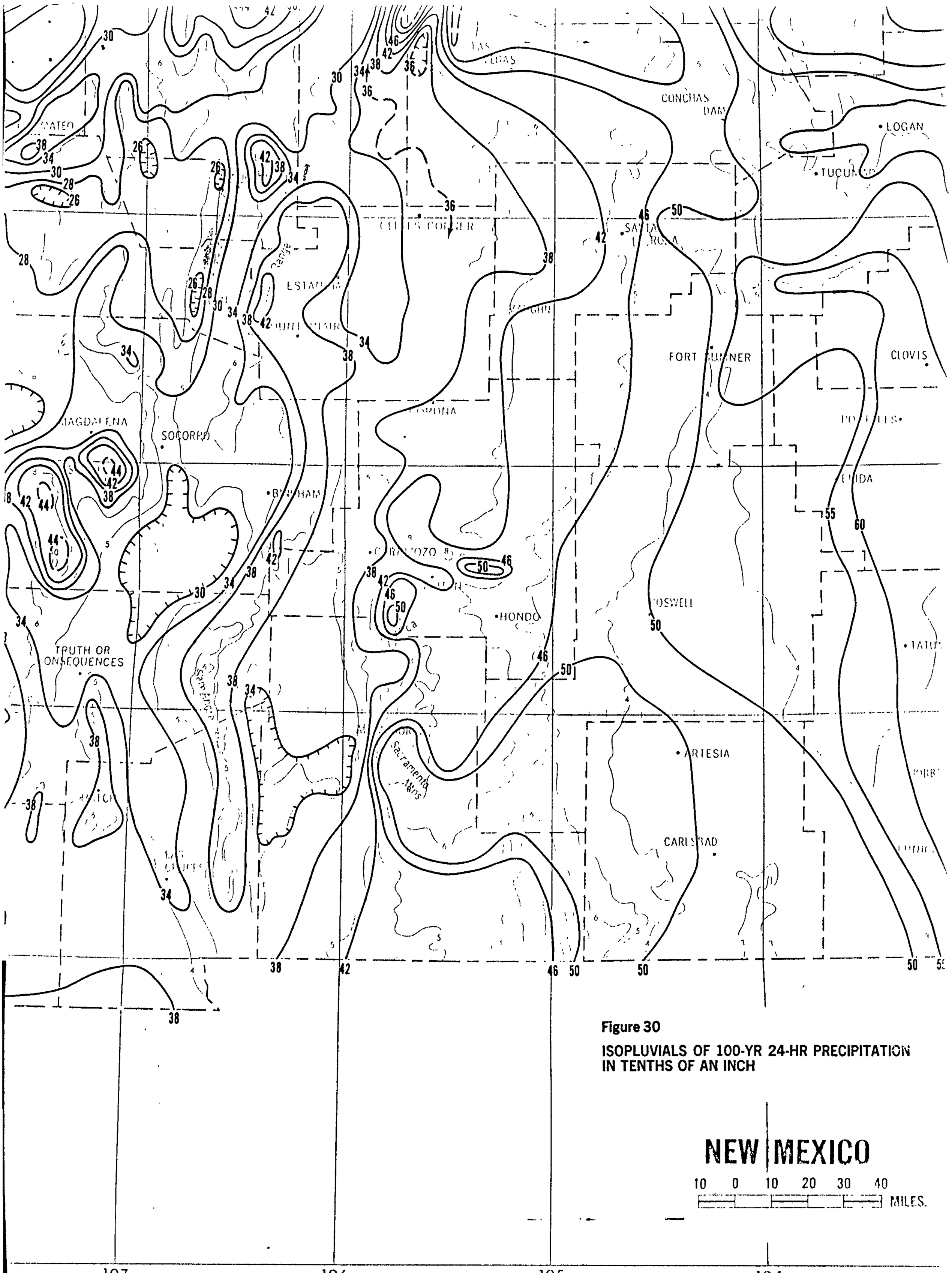


Figure 30

ISOPLUVIALS OF 100-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

NEW MEXICO

10 0 10 20 30 40 MILES.

NOAA ATLAS 2

hapter 4: Graphical Peak Discharge method

is chapter presents the Graphical Peak Discharge thod for computing peak discharge from rural and ban areas. The Graphical method was developed m hydrograph analyses using TR-20, "Computer ogram for Project Formulation—Hydrology" (SCS 3). The peak discharge equation used is

$$q_p = q_u A_m Q F_p \qquad \text{[Eq. 4-1]}$$

ere

q_p = peak discharge (cfs);
q_u = unit peak discharge (csm/in);
A_m = drainage area (mi^2);
Q = runoff (in); and
F_p = pond and swamp adjustment factor.

e input requirements for the Graphical method are follows: (1) T_c (hr), (2) drainage area (mi^2), (3) propriate rainfall distribution (I, IA, II, or III), (4) -hour rainfall (in), and (5) CN. If pond and swamp eas are spread throughout the watershed and are t considered in the T_c computation, an adjustment pond and swamp areas is also needed.

eak discharge computation

r a selected rainfall frequency, the 24-hour rainfall is obtained from appendix B or more detailed al precipitation maps. CN and total runoff (Q) for watershed are computed according to the thods outlined in chapter 2. The CN is used to termine the initial abstraction (I_a) from table 4-1. P is then computed.

he computed I_a/P ratio is outside the range shown exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall tribution of interest, then the limiting value ould be used. If the ratio falls between the limiting lues, use linear interpolation. Figure 4-1 illustrates sensitivity of I_a/P to CN and P.

k discharge per square mile per inch of runoff) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III using T_c (chapter 3), rainfall distribution type, and P ratio. The pond and swamp adjustment factor is tained from table 4-2 (rounded to the nearest table lue). Use worksheet 4 in appendix D to aid in mputing the peak discharge using the Graphical thod.

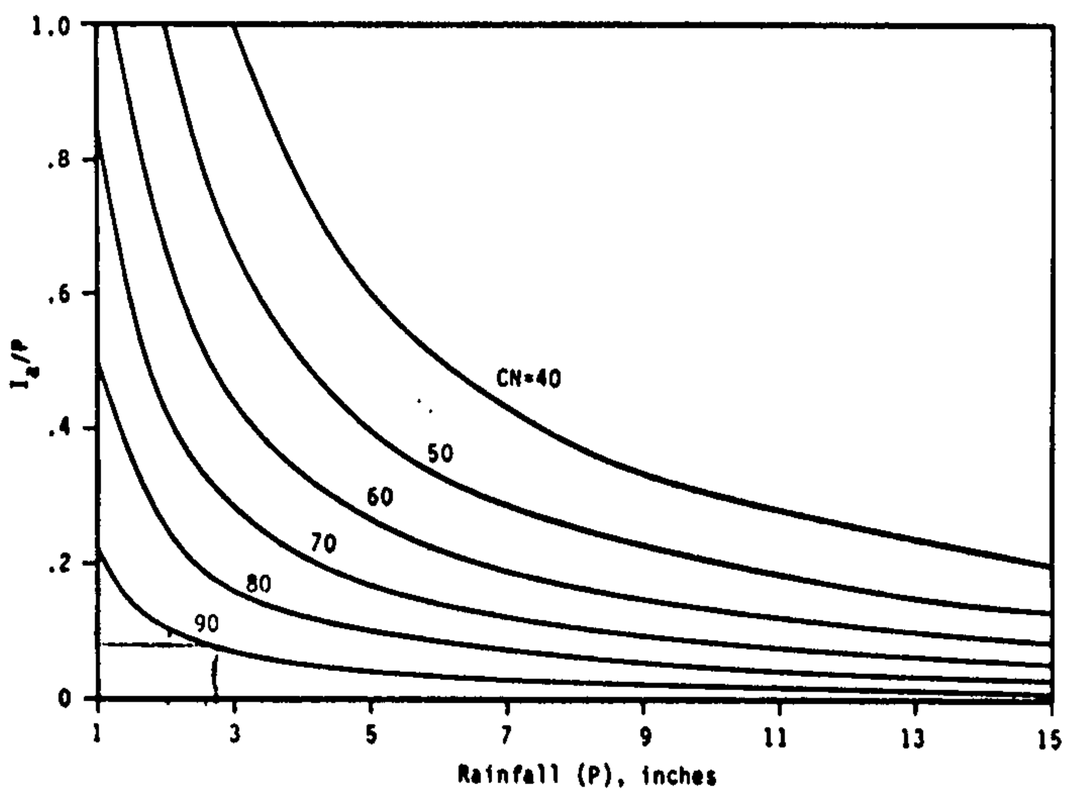
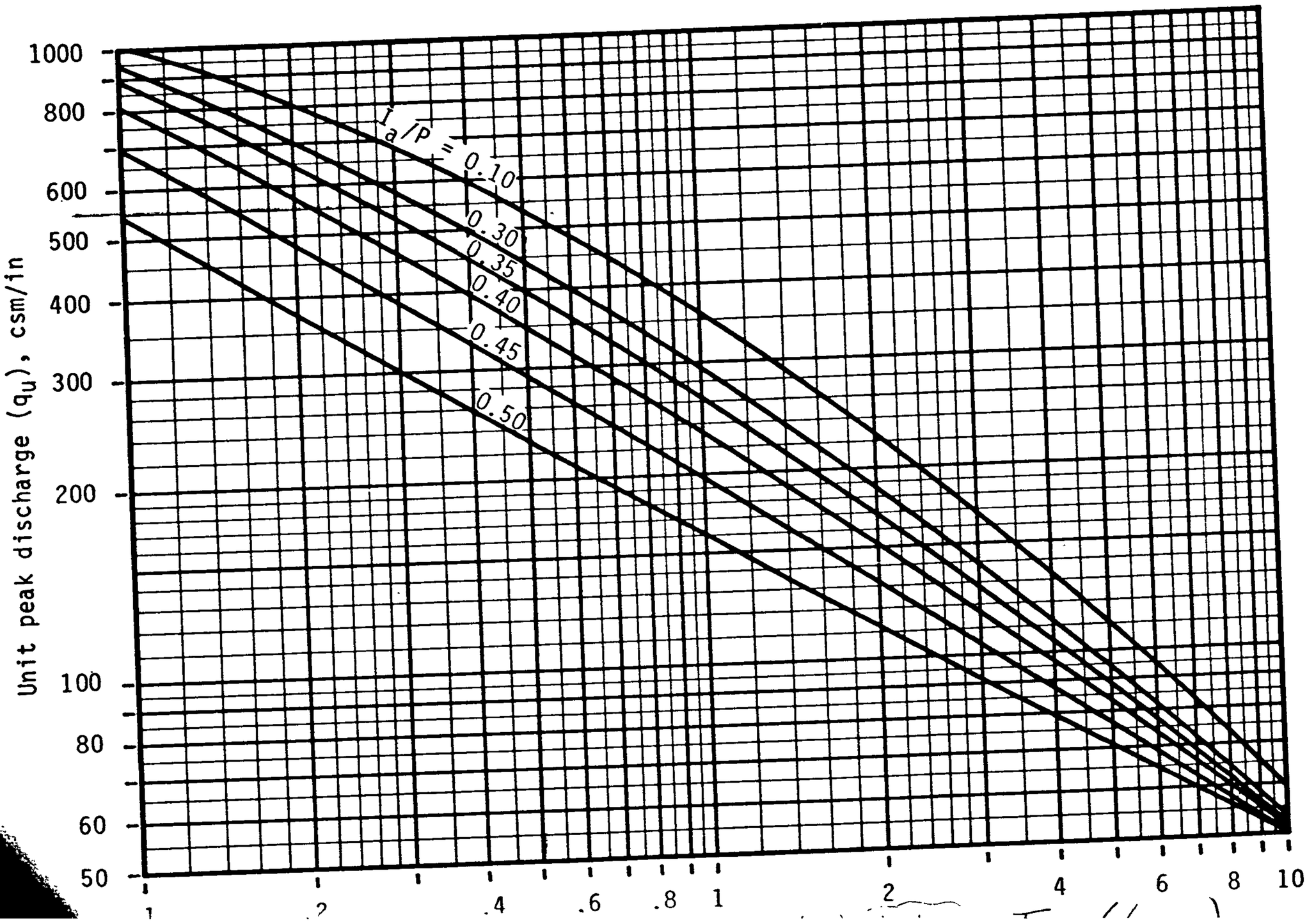


Figure 4-1.—Variation of I_a/P for P and CN.

Table 4-1.—I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

Exhibit 4-II: Unit peak discharge (q_u) for SCS type II rainfall distribution



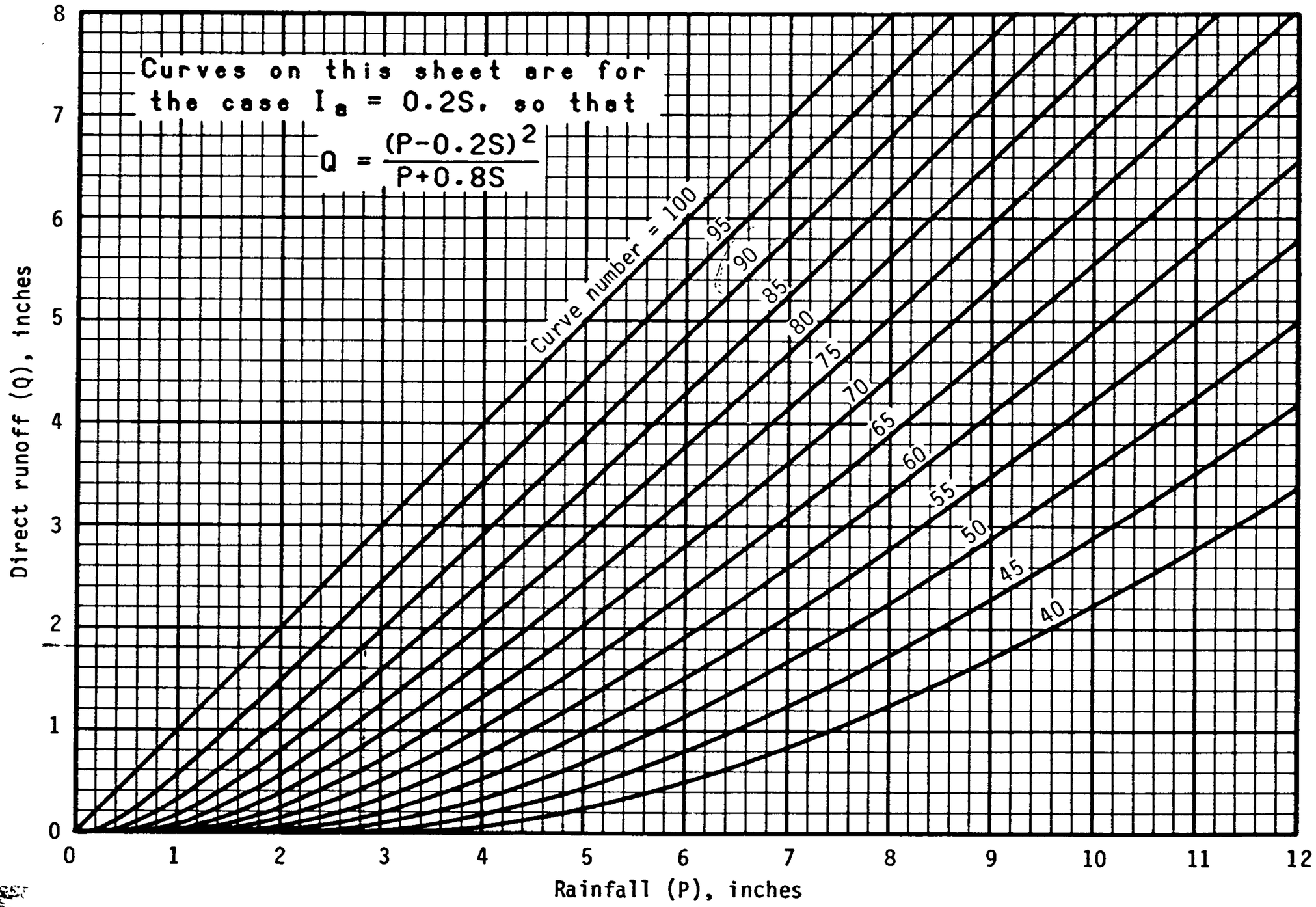


Figure 2-1.—Solution of runoff equation.

xture is given in appendix A for determining the SG classification for disturbed soils.

over type

able 2-2 addresses most cover types, such as egetation, bare soil, and impervious surfaces. There re a number of methods for determining cover type. he most common are field reconnaissance, aerial hotographs, and land use maps.

reatment

reatment is a cover type modifier (used only in able 2-2b) to describe the management of cultivated gricultural lands. It includes mechanical practices, uch as contouring and terracing, and management ractices, such as crop rotations and reduced or no illage.

Hydrologic condition

Hydrologic condition indicates the effects of cover type and treatment on infiltration and runoff and is generally estimated from density of plant and residue cover on sample areas. *Good* hydrologic condition indicates that the soil usually has a low runoff. potential for that specific hydrologic soil group, cover type, and treatment. Some factors to consider in estimating the effect of cover on infiltration and runoff are (a) canopy or density of lawns, crops, or other vegetative areas; (b) amount of year-round cover; (c) amount of grass or close-seeded legumes in rotations; (d) percent of residue cover; and (e) degree of surface roughness.

Figure 2-1.—Solution of runoff equation.

Table 2-1.—Runoff depth for selected CN's and rainfall amounts[1]

Rainfall	Runoff depth for curve number of—												
	40	45	50	55	60	65	70	75	80	85	90	95	98
	inches												
1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.17	0.32	0.56	0.79
1.2	.00	.00	.00	.00	.00	.00	.03	.07	.15	.27	.46	.74	.99
1.4	.00	.00	.00	.00	.00	.02	.06	.13	.24	.39	.61	.92	1.18
1.6	.00	.00	.00	.00	.01	.05	.11	.20	.34	.52	.76	1.11	1.38
1.8	.00	.00	.00	.00	.03	.09	.17	.29	.44	.65	.93	1.29	1.58
2.0	.00	.00	.00	.02	.06	.14	.24	.38	.56	.80	1.09	1.48	1.77
2.5	.00	.00	.02	.08	.17	.30	.46	.65	.89	1.18	1.53	1.96	2.27
3.0	.00	.02	.09	.19	.33	.51	.71	.96	1.25	1.59	1.98	2.45	2.77
3.5	.02	.08	.20	.35	.53	.75	1.01	1.30	1.64	2.02	2.45	2.94	3.27
4.0	.06	.18	.33	.53	.76	1.03	1.33	1.67	2.04	2.46	2.92	3.43	3.77
4.5	.14	.30	.50	.74	1.02	1.33	1.67	2.05	2.46	2.91	3.40	3.92	4.26
5.0	.24	.44	.69	.98	1.30	1.65	2.04	2.45	2.89	3.37	3.88	4.42	4.76
6.0	.50	.80	1.14	1.52	1.92	2.35	2.81	3.28	3.78	4.30	4.85	5.41	5.76
7.0	.84	1.24	1.68	2.12	2.60	3.10	3.62	4.15	4.69	5.25	5.82	6.41	6.76
8.0	1.25	1.74	2.25	2.78	3.33	3.89	4.46	5.04	5.63	6.21	6.81	7.40	7.76
9.0	1.71	2.29	2.88	3.49	4.10	4.72	5.33	5.95	6.57	7.18	7.79	8.40	8.76
10.0	2.23	2.89	3.56	4.23	4.90	5.56	6.22	6.88	7.52	8.16	8.78	9.40	9.76
11.0	2.78	3.52	4.26	5.00	5.72	6.43	7.13	7.81	8.48	9.13	9.77	10.39	10.76
12.0	3.38	4.19	5.00	5.79	6.56	7.32	8.05	8.76	9.45	10.11	10.76	11.39	11.76
13.0	4.00	4.89	5.76	6.61	7.42	8.21	8.98	9.71	10.42	11.10	11.76	12.39	12.76
14.0	4.65	5.62	6.55	7.44	8.30	9.12	9.91	10.67	11.39	12.08	12.75	13.39	13.76
15.0	5.33	6.36	7.35	8.29	9.19	10.04	10.85	11.63	12.37	13.07	13.74	14.39	14.76

[1]Interpolate the values shown to obtain runoff depths for CN's or rainfall amounts not shown.

Rational Method

Industrial	C
light area	0.50 - 0.80
use	C = 0.7

Time = 0.496 hrs = 29.8 min

6 hr rainfall = 2.2"

$I = (2.2)(6.84)(29.8)^{-0.51} = 2.66$ in/hr.

Area = 308.3 Ac.

$Q = C\ I\ A = (0.7)(2.66)(308.3) = \underline{574.0\ cf}$

310
2.7
2170
620
837.0

60
.3
18

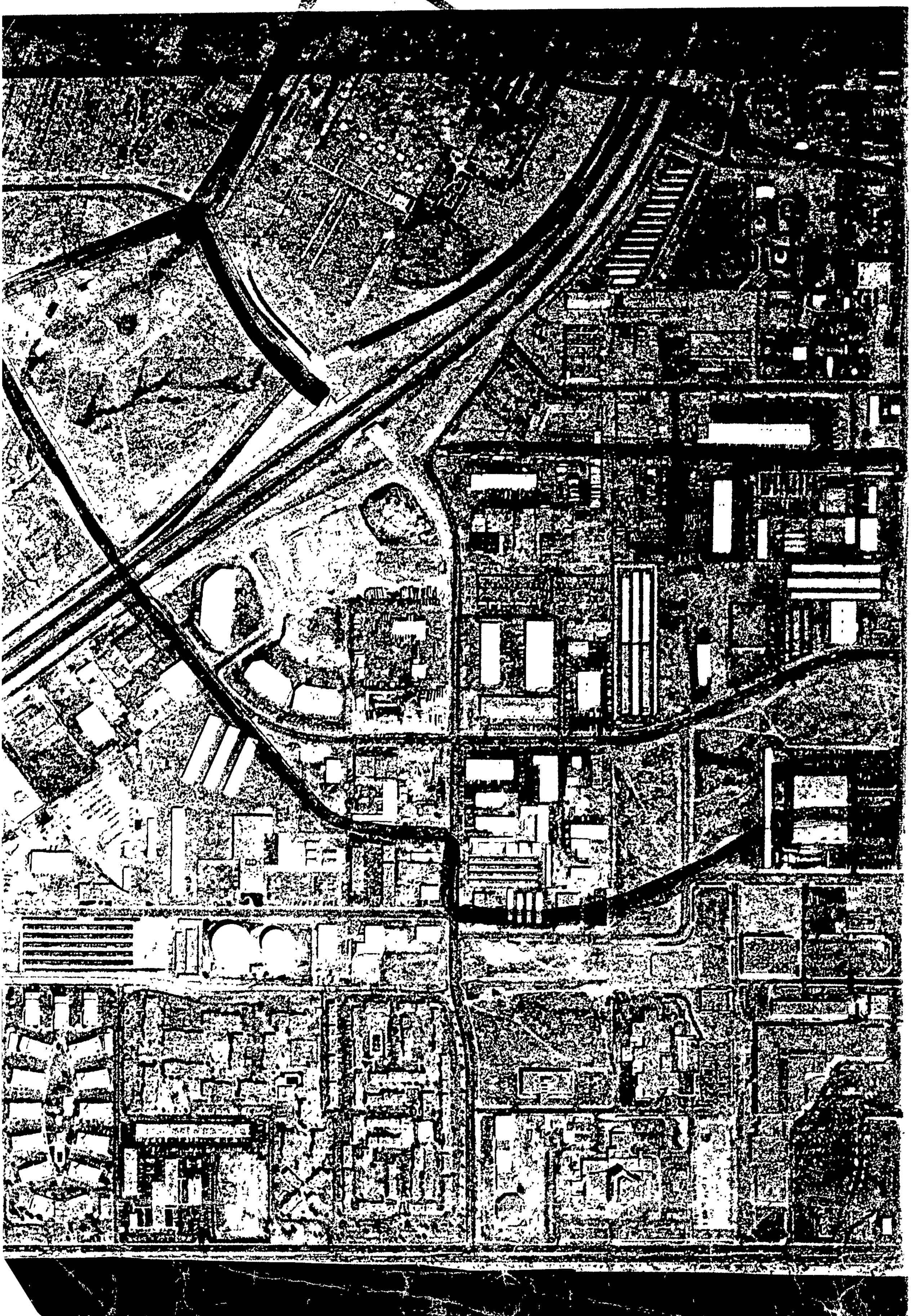
574
320
254

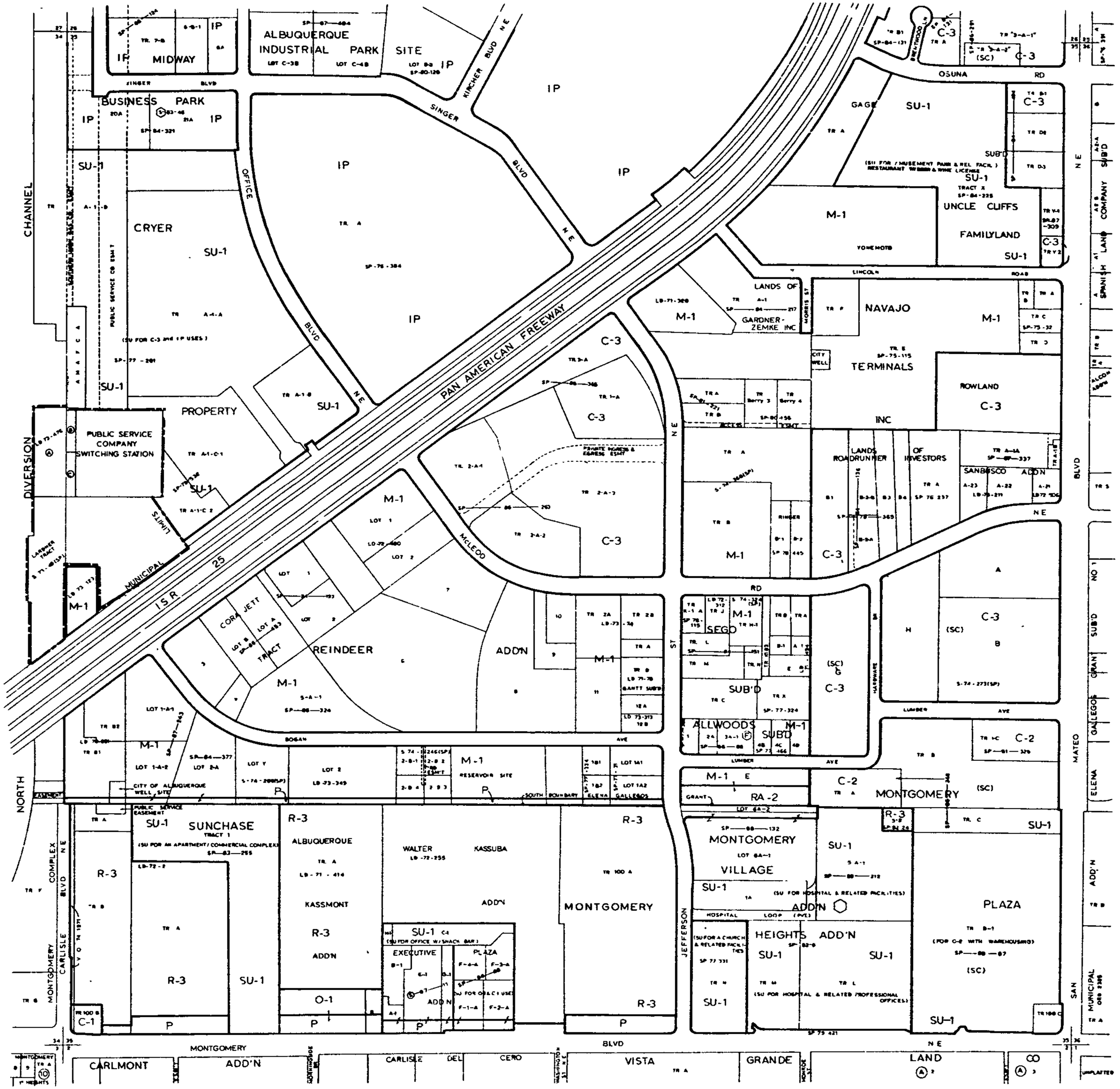
.63

.45 hrs

46

1"=500' 1987





SCALE

LEGAL DESCRIPTION

T 11 N

R 3 E

SEC 36

UNIFORM PROPERTY CODE

1-017-061

MAP AMENDED THROUGH

MAY 1988

F-17-Z

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT

NEW MEXICO STATE HIGHWAY
AND TRANSPORTATION DEPARTMENT
AN EQUAL OPPORTUNITY EMPLOYER

NOV 1989
Received
PWD/Engineering
Project Review

November 7, 1989

GARREY CARRUTHERS
GOVERNOR

COMMISSION

Willie Ortiz
Chairman, Santa Fe

J. V. "Rip" Curtis
Vice-Chairman, Clovis

Mary Jean Christensen
Secretary, Gallup

Jack Westman
Member, Albuquerque

Dr. Donald Reif
Member, Clayton

Quentin Ford
Member, Las Cruces

DEPARTMENT

Secretary
Dewey Lonsberry

General Office
P.O. Box 1149
Santa Fe, N.M.
87504-1149
505-827-5100

District One Office
P.O.Box 231
Deming, N M
88031-0231
505-546-2603

District Two Office
P.O. Box 1457
Roswell, N M
88202-1457
505-624-3300

District Three Office
P.O. Box 3768
Station D
Albuquerque, N.M
87190-3768
505-841-2700

District Four Office
P O Box 30
Las Vegas, N M
87701-0030
505-425-7527

District Five Office
P O Box 4127
Coronado Station
Santa Fe, N M
87502-4127
505-827-9500

District Six Office
P.O. Box 2159
Milan, N M
87021
505-285-6623

Mr. Carlos Montoya
City of Albuquerque, Rm. 3013
P.O. Box 1293
Albuquerque, NM 87103

Subject: Revised Drainage Plan for West Frontage Road West Channel and Office Boulevard North Channel

Dear Carlos:

This is in response to your comments on your letter of September 18, 1989, regarding our drainage analysis on the West Frontage Road West Channel and Office Boulevard North Channel.

1. The CN value is changed from 84 to 88 to have the drainage basins reflect the land use as business and industrial areas.

2. Freeboard requirements range from 1.1 feet to 1.3 feet and the minimum available freeboard on this project is 1.5 feet. However, at the drop structure at the inlet of 2-60" CMPs, freeboard is less than the requirement, in order to allow runoff from the north to get into the culverts. Please see attached calculations for freeboard requirements.

3. The layout and drop structure locations were revised to minimize west bank fill. All drop structures have 10' long wire enclosed riprap at the downstream side.

4. A typical drop structure with the rebar layout is shown on the attached Plan and Detail Sheet 2 of 2.

5. We used DPM requirement of 12 feet in length of erosion protection upstream of the channel concrete lining transition from unlined channel and the cutoff walls will be a minimum of 3' deep . In addition, the NMSH&TD Maintenance Office in Albuquerque will maintain the channel.

6. Please refer to Sheet 2 of 2 for plan details on the following:
   A. Culvert outfall into the drop structure.
   B. 90° turn at the outfall of the 3-36" RCPs.
   C. 90° turn at the 2-60" CMPs.
   D. The channel improvement starts at 42 feet

north of the 48" RCP outlet, while the 1-36" RCP outlet is located 265 feet to the west of the 1-48" RCP outlet. The channel slope between 1-36" RCP and 1-48" RCP is 0.01 1ft./1ft., this portion will be cleaned and regraded.

7. We used the TR-20 computational method to calculate the runoff. The 100 year flow at the beginning of the channel is 161 cfs coming from 1-48" RCP across I-25 which was routed through the culvert with a drainage area of 87.5 acres and from 1-36" RCP across Jefferson Boulevard with a drainage area of 43 acres, a total drainage area of 130.5 acres.

   Then the 161 cfs was routed through the 8 foot bottom wide west channel along West Frontage Road into the intersection of Office Boulevard and West Frontage Road, runoff from 141 acres of drainage area discharging through 3-36" RCP's has been added and the total flow at this location is 320 cfs.

   The 320 cfs flow is routed through 15 foot bottom wide north channel along Office Boulevard, with the addition of runoff from 36.8 acres of drainage area to the north, the total flow at the inlet of 2-60" CMP's is 350 cfs.

8. Please see attached calculation for the riprap design. Riprap will be 6" average size aggregates and 1'-0" thick.

9. Velocities are within the allowable requirement for unprotected earth channel of 3 fps to 5 fps. and as mentioned on Item #5, this channel will be maintained by the Albuquerque District Maintenance Office.

10. Velocities are determined from the HEC-2 run, please see attached HEC-2 run copies.

11. The 2-60" CMP's are adequate and the 100 year flow of 350 cfs will not backup into the project site, but will be contained within the proposed concrete transition section.

If you have any questions regarding the revised drainage recommendations, please let us know.

Sincerely,

Raymunda A. Van Hoven
FOR Ronald E. Gaines
Drainage Engineer

REG:RVH:ilc

xc: Iqbal Awan DO #3 w/att.
Hugh Parry w/att.

HINKLE, COX, EATON, COFFIELD & HENSLEY

ATTORNEYS AT LAW

500 MARQUETTE N.W., SUITE 740

ALBUQUERQUE, NEW MEXICO 87102-2121

(505) 768-1500

FAX (505) 768-1529

LEWIS C. COX
PAUL W EATON
CONRAD E COFFIELD
HAROLD L HENSLEY, JR
STUART D SHANOR
C D MARTIN
PAUL J KELLY, JR
OWEN M LOPEZ
DOUGLAS L. LUNSFORD
JOHN J KELLY
T CALDER EZZELL, JR
WILLIAM B BURFORD*
RICHARD E OLSON
RICHARD R WILFONG*
STEVEN D ARNOLD
JAMES J WECHSLER
NANCY S. CUSACK
JEFFREY L. FORNACIARI
JEFFREY D HEWETT
JAMES BRUCE
JERRY F. SHACKELFORD*
JEFFREY W HELLBERG*
ALBERT L PITTS
THOMAS M HNASKO
JOHN C CHAMBERS*
THOMAS D HAINES, JR
FRANKLIN H McCALLUM*

GREGORY J NIBERT
DAVID T MARKETTE*
MARK C DOW
KAREN M RICHARDSON*

FRED W SCHWENDIMANN
DAVID MORAN
JAMES R McADAMS*
JAMES M HUDSON
MACDONNELL GORDON
REBECCA NICHOLS JOHNSON
PAUL R NEWTON
WILLIAM P JOHNSON
ELLEN S CASEY
MARGARET C LUDEWIG
PATRICIA A. WATTS*
MARTIN MEYERS
GREGORY S WHEELER
ANDREW J CLOUTIER
S BARRY PAISNER
W CRAIG BARLOW*
JAMES A GILLESPIE
KAREN L COLLIER
GARY W LARSON
STEPHANIE LANDRY
JERRY D WORSHAM, II

OF COUNSEL
O M CALHOUN
MACK EASLEY
JOE W WOOD

CLARENCE E HINKLE (1901-1985)
W E BONDURANT, JR (1913-1973)
ROY C SNODGRASS, JR. (1914-1987)

*NOT LICENSED IN NEW MEXICO

700 UNITED BANK PLAZA
POST OFFICE BOX 10
ROSWELL, NEW MEXICO 88202
(505) 622-6510
FAX (505) 623-9332

2800 CLAYDESTA NATIONAL BANK BUILDING
POST OFFICE BOX 3580
MIDLAND, TEXAS 79702
(915) 683-4691
FAX (915) 683-6518

1700 TEXAS AMERICAN BANK BUILDING
POST OFFICE BOX 9238
AMARILLO, TEXAS 79105
(806) 372-5569
FAX (806) 372-9761

218 MONTEZUMA
POST OFFICE BOX 2068
SANTA FE, NEW MEXICO 87504
(505) 982-4554

RECEIVED
SEP 15 1989
HYDROLOGY SECTION

September 8, 1989

Mr. Fred Aguirre, Chief
Hydrology Division
City of Albuquerque
400 Marquette NW
Albuquerque, NM 87102

Subject: Hydrology and Hydraulic Analysis of the West Channel SB Frontage Road and the North Channel on Office Boulevard, southwest of Jefferson Interchange in Albuquerque

Dear Fred:

This letter will confirm my telephone call to you concerning the receipt of the drainage study of Mr. Ronald E. Gaines for the New Mexico State Highway and Transportation Department concerning the Digital property south of their manufacturing plant at Jefferson and I-25, more particularly described as the Broja Trust Tract A.

According to the Settlement Agreement between the State of New Mexico, the City of Albuquerque and Digital Equipment Corporation, the drainage ditch is to be designed, constructed sufficient to carry all drainage from I-25 and Kircher Boulevard through the drainage easement with no burden to remain upon or against Broja Trust Tract A. It is my understanding that upon satisfactory review of the State

of New Mexico's report and acceptance of the as built plans for the drainage ditch, the 100-year flood-plain encumbrance will be removed from the Broja Trust tract, and that no other encumbrance for water originating off the property will exist.

I am enclosing a copy of the signed Settlement Agreement between the State of New Mexico, the City of Albuquerque and DEC. Once you have reviewed the drainage report and the obligation of the State to construct and maintain the drainage easement, please call me to coordinate final approval of the easement and removal of the Broja Trust Tract from the 100 year flood-plain.

Should you have any concerns or questions, please do not hesitate to call me at your earliest convenience.

Very truly yours,

HINKLE, COX, EATON, COFFIELD
& HENSLEY

By: MARK C. DOW

Enclosure

cc:
Joan White, Esq.
Donald L. Jones, Esq.
both w/o enclosure

MCD:g

The HEC-2 runs include the 3-60" CMPs and the downstream channel for 123 feet. There is 43 feet of concrete lined channel at the outlet of the 3-60" CMPs, 30 feet of wire enclosed riprap and 50 feet of graded channel to match the existing grade.

Enclosed please find copies of HEC-2 runs, HYMO-run, Sheet Nos. 1,2 & 3 for the CME Boundaries, Water Surface Profile and Plans, Sections and Details and as-built plan for Office Boulevard detour.

Your prompt action regarding these drainage recommendations is highly appreciated.

If you have any questions regarding the revised drainage recommendations, please let us know.

Sincerely,

Ronald E. Gaines

Ronald E. Gaines
Drainage Engineer

REG:ilc

xc: Fred Aguirre, City of Alb. w/ att.
Hugh Parry, w/att.
Martin Gavurnik, w/att.
Iqbal Awan, DO 3 w/att.

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

By RVH 10/23

Item 2. Freeboard

Ref. DPM

$Q \geq 100$ cfs & $V_{ave} < 35$ fps

I Freeboard $= 1.0 + 0.025 V d^{1/3}$

$Q \geq 100$ cfs & $V_{ave} > 35$ fps

II Freeboard $= 0.7(2 + .025 V d^{1/3})$

STATION	d	V	Freeboard I	Freeboard II		Actual Freeboard
15+71.3	0.7	8.47	1.19	1.5	<	2.1
15+42	0.64	9.43	1.2	1.5	<	3.9
15+16	0.94	17.54	1.4	1.7	<	6.7
14+00	2.58	4.73	1.16	1.5	<	2.6
12+00	2.52	4.9	1.16	1.5	<	1.6
11+00	1.94	7.01	1.2	1.5	<	2.1
10+66	1.21	12.71	1.3	1.6	<	3.1
9+00	2.58	4.75	1.2	1.5	<	2.3
7+90	1.94	7.01	1.2	1.5	<	2.0
7+76	0.94	17.55	1.4	1.7	<	4.5
7+00	2.5	4.96	1.2	1.5	<	4.5
5+72.5	1.93	7.01	1.2	1.6	<	4.0
5+27	2.66	9.02	1.3	1.6	<	4.6
4+00	2.84	5.42	1.2	1.5	<	4.8
2+00	2.79	5.6	1.2	1.5	<	1.6
0+15	4.42	3.32	1.1	1.5	>	0.5'
0+02	5.98	2.45	1.1	1.5	>	0.5'

These are where RO to the north get in.

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

By RVH 11/1/89

ITEM 8. Riprap
Ref. HEC #15 FHWA, Drainage of Roadside Channels w/ Flexible linings

Typical Example

STA. 10+66 Q = 161 cfs

P.36 Permissible Unit shear stress, T_p = 2 lb/ft² for 6" size aggregate

Channel S = .003'/'

P. 37 Table 3 n = 0.069, 1.0' deep or thick

depth of flow = 1.21'

Shear Stress, $T_d = \gamma ds$

$= 62.4 \times 1.21 \times 0.003$

$= 0.226 < 2$

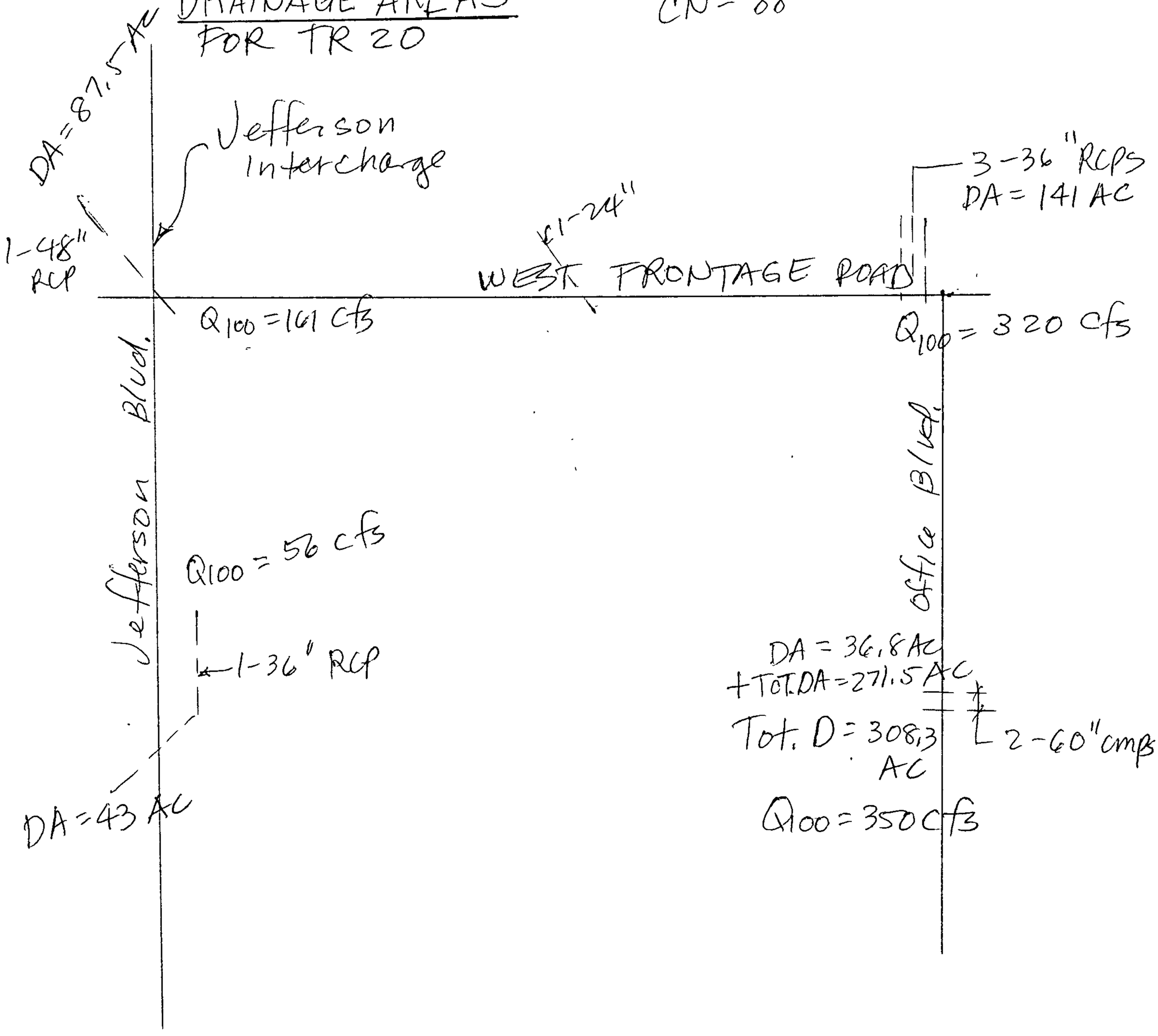
∴ 1.0' thick riprap is adequate

use 6" size riprap at 1.0' thick. Enclose with wire fabric.

NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT
SANTA FE, NEW MEXICO

DRAINAGE AREAS FOR TR 20

CN = 88



STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

TELECOPIER LEAD SHEET

ATTENTION: Dwayne Sheppard

COMPANY: City of ABQ

11-21-89 - Resubmitted

DATE: 11-1-89

TOTAL PAGES: 5 INCLUDING THIS COVER SHEET.

FROM: Rey Lomeli

TELECOPIER OPERATOR: _____

PHONE NUMBER: _____

If any page or pages did not come through clear, please call telecopier operator at (505) 827-5431.

Office of General Counsel Fax No. (505) 827-5445

Iqbal Awan asked me to send you a copy of the proposed agreement. Please call me.

Iqbal Awan - 881-1990

SECOND JUDICIAL DISTRICT

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

No.

ALBUQUERQUE DRIVE-IN THEATRES, INC., a New Mexico Corporation Petitioner, vs. STATE OF NEW MEXICO ex rel. NEW MEXICO STATE HIGHWAY COMMISSION, an agency of the State of New Mexico Defendants.	)

SETTLEMENT AGREEMENT

The Plaintiff, ALBUQUERQUE DRIVE-IN THEATRES, INC. (hereafter "Theatres") and Defendant, STATE OF NEW MEXICO ex rel. NEW MEXICO STATE HIGHWAY COMMISSION (hereafter "SHTD") in settlement of the above-captioned matter agree as follows:

1. Theatres will grant SHTD access to the Vineyard Arroyo upon its property for purposes of the construction hereinafter set forth. This Settlement Agreement shall be that grant of access. However, if SHTD requires a separate access agreement, Theatres will execute a reasonable separate document.

2. SHTD will grade and shape the area of the Vineyard Arroyo south of the Office Road culverts in an area sufficient to construct a lined channel serving the purpose of redirecting the water coming from the culverts away from the western side of the arroyo and down the main line of the channel.

3. SHTD will stake the area which it believes is required for the right of way to perform the construction.

4. Upon completion of the grading, shaping and staking, the parties by their designated representatives will meet at the site in order to resolve any disagreements about the dimensions and concept of construction. The parties will act in good faith in resolving all disagreements concerning those matters. Theatres shall not be responsible for design and construction of the improvements.

5. When the dimensions and concept have been agreed, SHTD shall have its engineers survey the right of way for purposes of obtaining the description for the right of way grant. However, Theatres will provide SHTD major boundary control points in the immediate area of the proposed construction so as to enable SHTD to prepare the survey.

6. SHTD will promptly construct a lined channel in accordance with the concept contained in Exhibit A attached hereto. The construction shall allow for entry to the channel

of water from the east and west along Office Road. The area between the new lining and the fence to the west will be graded and compacted.

7. Theatres will grant to City of Albuquerque a right of way for the area of the channel and sufficient room adjacent for future maintenance, but such area shall not include any property with the fence line of the theater.

8. Upon completion of construction and issuance and acceptance of the grant of right of way, Albuquerque Six Drive In Theaters shall dismiss the pending litigation with prejudice. Said dismissal shall not prejudice or release SHTD from problems which may arise from future changes by SHTD upstream.

Albuquerque Six Drive-In Theatres, Inc.

_____

By: _____

Title: _____

Crider, Calvert & Bingham, P.C.

_____

Carl A. Calvert
Attorneys for Albuquerque Six Drive-In Theatres, Inc.

New Mexico State Highway and
Transportation Department

_____

By: _____

Title: _____

_____
Attorney for New Mexico State Highway
Commission

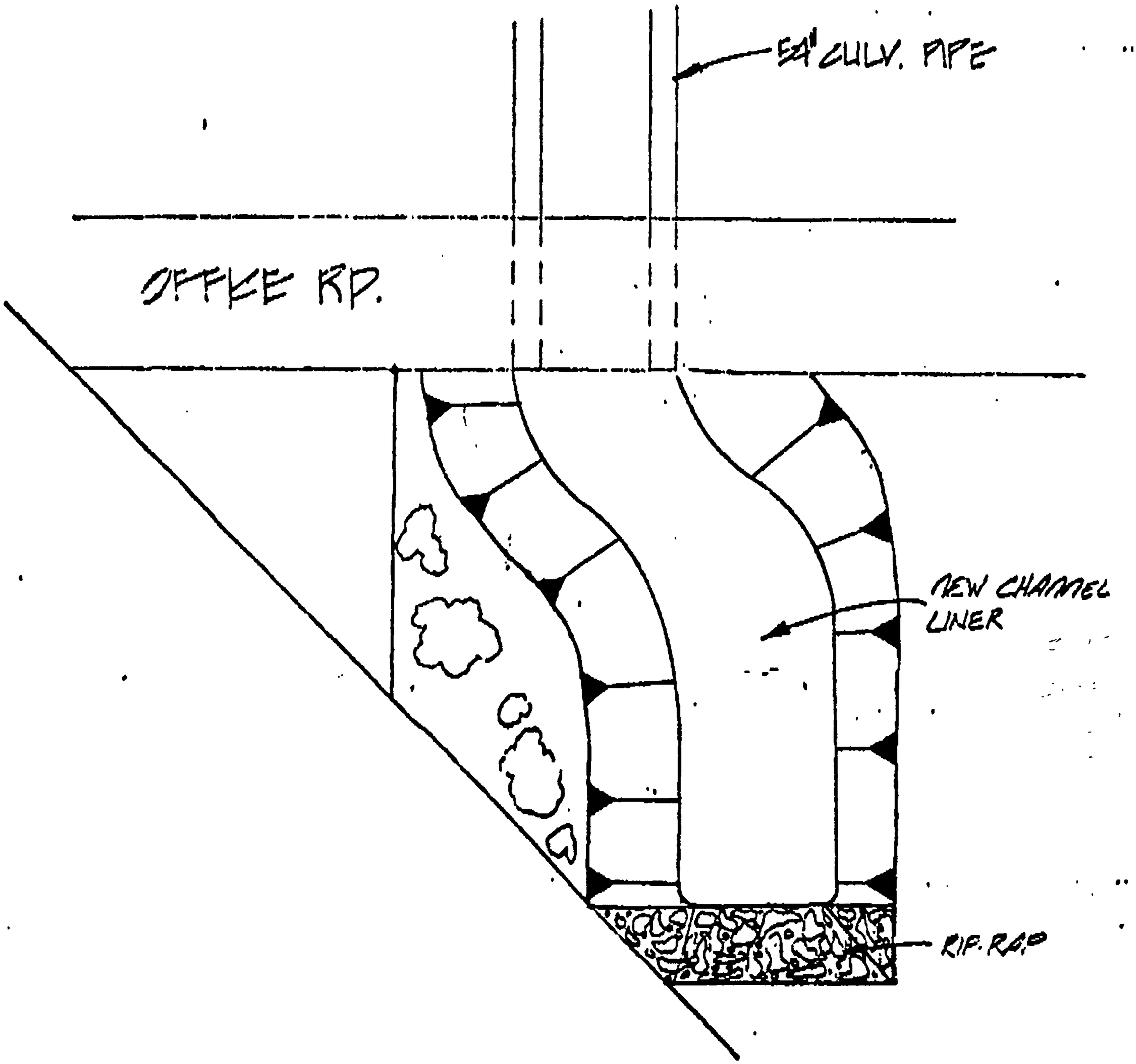
City of Albuquerque

_____

By: _____

Title: _____

_____
Attorney for City of Albuquerque



PROPOSED EROSION CONTROL AT S.E. CORNER

NTS

EXHIBIT A

C.J.T.
11/11/85

New Mexico
State Highway & Transportation Department

I N T R A - D E P A R T M E N T A L C O R R E S P O N D E N C E

SUBJECT: Drainage Channel, West Frontage Road & Office Blvd.. Southwest of Jefferson Inter. in Albuquerque

DATE: 5/31/90

FILE REFERENCE:

TO: Charlie Trujillo
Traffic Design Section

FROM: Raymunda Van Hoven, Acting
Drainage Engineer

The District Office #3 is in the process of developing this project to be let out to contract, which was previously intended to be built by the DO #3 Maintenance Crew.

The subject project is located in the West Frontage Road west channel toward Office Boulevard north channel southwest of Jefferson Interchange.

There are existing 2-60" culverts crossing Office Boulevard approximately 500' west of West Frontage Road/Office Boulevard Intersection and it will require additional 1-60" culvert at this location.

Enclosed are copies of the Plan and Profile Details and Boundary Plan, the 2-60" culverts crossing is circled in red on the Boundary Plan. Highway Design will prepare the plans and the Bridge Design is currently reviewing the structural plans.

I request your office to evaluate if a traffic control is necessary on this project.

Your assistance is highly appreciated.

Sincerely,

Rae Van Hoven

Rae Van Hoven, Acting
Drainage Engineer

RVH:ilc

XC: I. Awan

New Mexico
State Highway & Transportation Department

I N T R A - D E P A R T M E N T A L C O R R E S P O N D E N C E

SUBJECT: Drainage Channel, West Frontage Road & Office Blvd. Southwest of Jefferson Inter. in Albuquerque

DATE: 5/31/90

FILE REFERENCE:

TO: Lester Cisneros,
Railroad & Utilities

FROM: Raymunda Van Hoven, Acting
Drainage Engineer

District Office #3 is in the process of developing this project to be let out to contract, which was previously intended to be built by the DO #3 Maintenance Crew.

The subject project is located in the West Frontage Road west channel toward Office Boulevard north channel southwest of Jefferson Interchange in Albuquerque.

Enclosed are copies of the Plan and Profile, Details and Boundary Plan of the subject project. Highway Design will prepare the plans and Bridge Design is currently reviewing the structural plans.

By copy of this letter, I request your office to review and prepare any applicable utility plan.

The letter from the City of Albuquerque, Floodplain Administrator is enclosed. Item #2 requires existing utilities to be shown with reference to details.

If you have any questions or need more information, please let me know. Thank you for your assistance.

Sincerely,

Rae Van Hoven

Rae Van Hoven, Acting
Drainage Engineer

xc: I. Awan w/att.
M. Scheffer