



September 29, 1997

Martin J. Chávez, Mayor

Ronald Bohannon, P.E.
Tierra West, LLC
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

**RE: MARKET PLACE AT JOURNAL CENTER - PHASE 1 (D17-D3B1). ENGINEER'S
CERTIFICATION FOR RELEASE OF FINANCIAL GUARANTEES.
ENGINEER'S CERTIFICATION DATED JULY 21, 1997.**

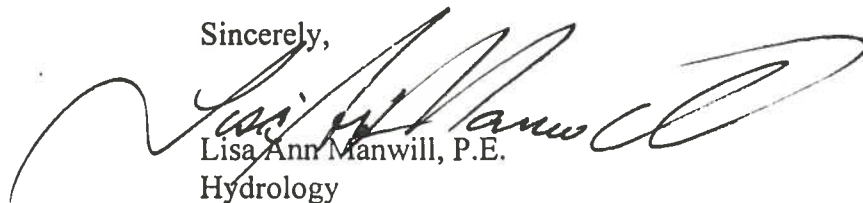
Dear Mr. Bohannon:

Based on the information provided on your September 22, 1997 submittal, City Hydrology accepts the Engineer's Certification of grading and drainage for Release of Financial Guarantees.

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

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

Sincerely,

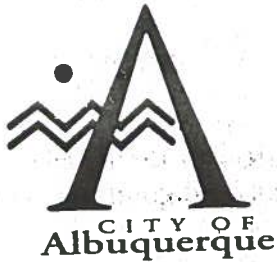


Lisa Ann Manwill, P.E.
Hydrology

c: Terri Martin
Andrew Garcia
File

Good for You, Albuquerque!





August 12, 1997

Martin J. Chávez, Mayor

Ronald Bohannon, P.E.
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

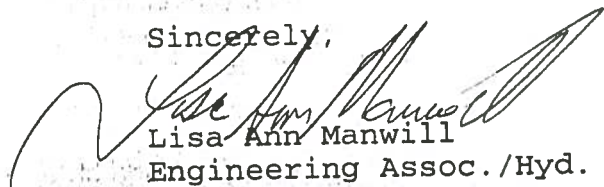
**RE: MARKET PLACE AT JOURNAL CENTER - PHASE 1 (D17-D3B1).
ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY.
ENGINEER'S CERTIFICATION DATED JULY 29, 1997.**

Dear Mr. Bohannon:

Based on the information provided on your July 29, 1997 submittal, the above referenced plan is approved for Certificate of Occupancy.

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

Sincerely,

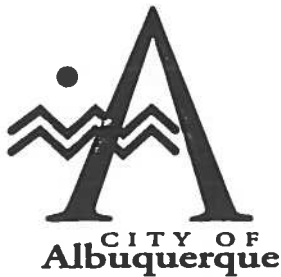


Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You, Albuquerque!





JN 760039
Drainage
imaging

July 21, 1997

Martin J. Chávez, Mayor

Shahab Biazar, P.E.
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

**RE: MARKET PLACE AT JOURNAL CENTER (D17-D3B1). UPDATED GRADING
PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED JULY
15, 1997.**

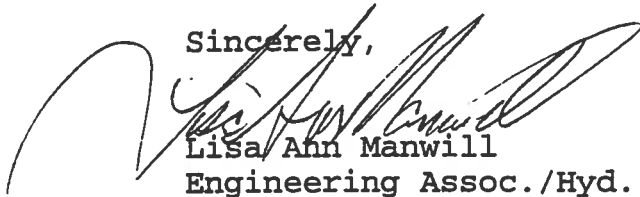
Dear Mr. Biazar:

Based on the updated information provided on your July 15, 1997
submittal, the above referenced plan is approved for Building
Permit.

Prior to Certificate of Occupancy approval, an Engineer's
Certification will be required. Be certain to certify the drawing
approved per this letter (stamped 7-15-97).

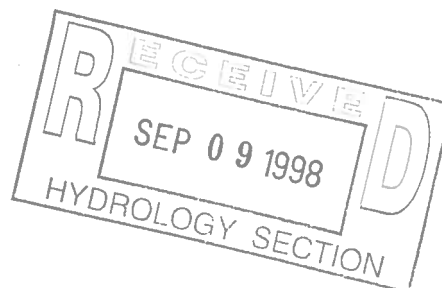
If I can be of further assistance, please feel free to contact me at
924-3984.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File



Good for You. Albuquerque!

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





City of Albuquerque

P. O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103
PUBLIC WORKS DEPARTMENT

September 25, 1997

CERTIFICATE OF WORK ORDER COMPLETION

Journal Center Corporation
7777 Jefferson St. NE
Albuquerque, NM 87109

Re: Market Place at Journal Center PROJECT NO. 5584.81 (MAP NO. D-17)

Dear Sir:

This is to certify that the City of Albuquerque accepts Project No. 5584.81 as being completed according to approved plans and construction specifications. Please be advised this certificate of completion shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

The project is described as follows:

- Storm Sewer Improvements and relocation in the Public Easement. Easement is on-site on the south edge of the property.
- Sanitary Sewer Improvements on-site within P.U.E. parallel to Jefferson St. from South Property Line to North Pino Arroyo.
- Construction of a 50' Median turn bay on Jefferson Blvd. into the West Entrance of the site.
- Construction of a Deceleration Lane on Jefferson Blvd. into Sun Avenue. Included the relocation of the sidewalk, and construction of a new handicap ramp.
- Construction of a 6" and 8" Fire Water Line from Sun Avenue to the West Property Line and a New 2" Water Service.

The contractor's correction period began the date of this letter and is effective for a period of one (1) year.



CITY OF
Albuquerque
Public Works Department

January 29, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Shahab Biazar
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

**RE: MARKET PLACE AT JOURNAL CENTER (D17-D3B1). UPDATED GRADING
PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED
JANUARY 24, 1997.**

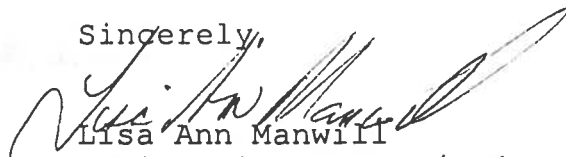
Dear Mr. Biazar:

Based on the updated information provided on your January 24, 1997
submittal, the above referenced plan is approved for Building
Permit.

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

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

Sincerely,


Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You, Albuquerque!

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





Martin J. Chávez, Mayor

Shahab Biazar
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

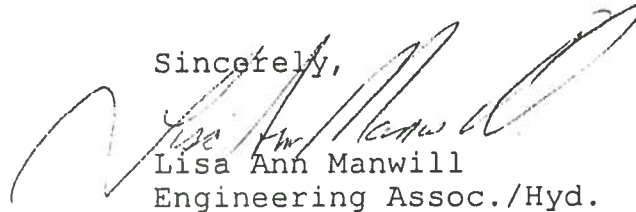
**RE: MARKET PLACE AT JOURNAL CENTER (D17-D3B1). GRADING PLAN
BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 12-17-96.**

Dear Mr. Biazar:

Based on the information provided on your December 18, 1996
submittal and your letter dated January 2, 1997, the above
referenced plan is approved for Building Permit.

If I can be of further assistance, please feel free to contact me at
768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File



DRAINAGE REPORT
FOR
Market Place
at
Journal Center

TRACT 3A-1C-1
OF
JOURNAL CENTER

Prepared by:

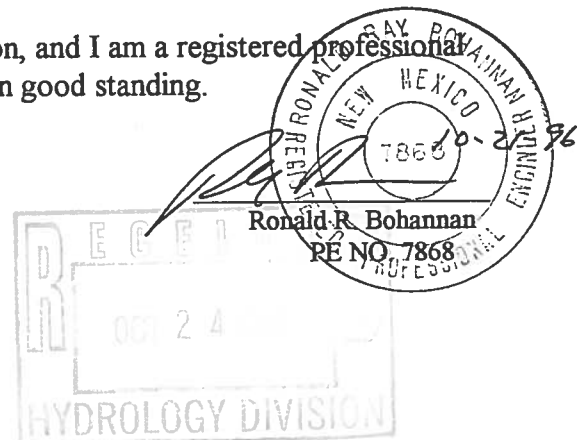


Tierra West Development Management Services
4421 McLeod Rd., NE, Suite D
Albuquerque, New Mexico 87109

August, 1996
Revised October, 1996

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the state of New Mexico in good standing.

Job No 960039



AF

Location

Tract 3A-1C-1 of the Journal Center is located at the southeast corner of the North Pino Arroyo Concrete Channel and Jefferson Street. The site is approximately 4.6302 acres and is the location of several proposed commercial/retail buildings. The purpose of this report is to provide the drainage analysis and management plan for the site.

Existing Drainage Conditions

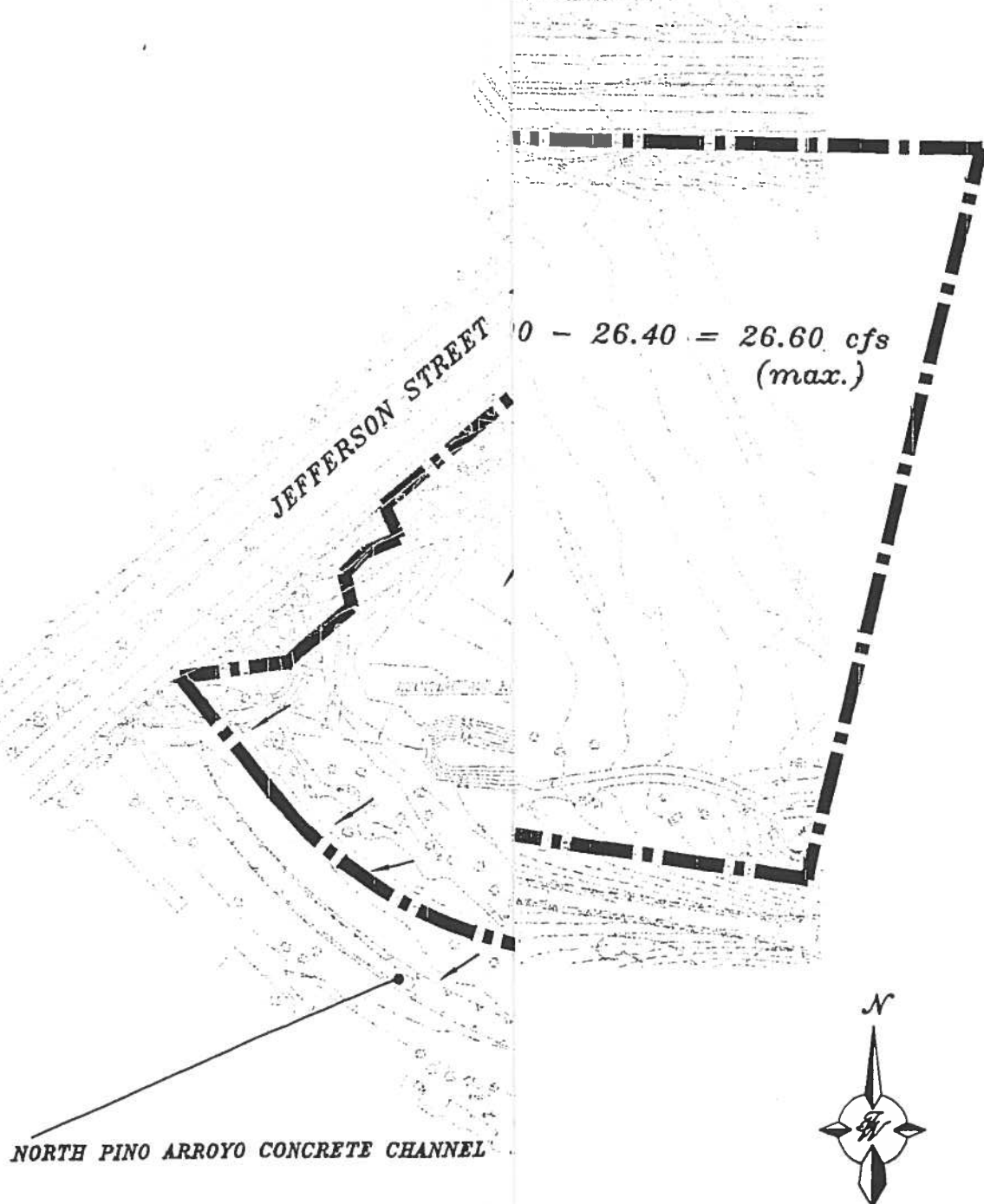
The site is currently undeveloped. The natural slope is from east to west at approximately 2.5 percent. The site falls within basin F (± 13.1 acres) of the Journal Center Master Drainage Plan. Under City Drainage number D17/D3B-1, the site is divided into several basins. See the attached "Existing Basin Layout" exhibit (sheet number 1.3 of this report). All upland basins drain to an existing storm sewer pipe that turns into an open channel. This channel drains to an existing desilting pond within this site and finally discharges to the North Pino Arroyo Concrete Channel via a 42" RCP. A summary of the existing flows on the site are as followings:

- Basin A (with a runoff of 10.87 cfs) flows east and south to an existing desilting pond within Tract 3A-1C-1 and the southerly portion surface flows to the North Pino Arroyo Concrete Channel.
- Basin B, which is a combination of three smaller basins (under City Drainage number D17/D3B-1), discharges a total runoff of 19.40 cfs west and south to Sun Lane to Tract 3A-1C-1 into the channel and then to the desilting pond.

+ 6.70 + 26.60
CFS

NOTE :

FLOW VALUES FOR BASINS A, B,
WERE OBTAINED FROM THE DRA
UNDER CITY DRAINAGE NUMBER cfs



- Basin C, which includes the runoff from the Sun Lane, flows to the west end of Sun Lane to and then enters the channel and finally to the desilting pond.
- Basin D is not fully developed, but the runoff values are computed for developed conditions. At the present time the entire basin drains to the southern end of the basin to a 42" storm sewer pipe via two drop inlets and then to the desilting pond within basin A. The easterly portion of the basin drains to a storm sewer drop inlet and from there, via a storm sewer pipe, the flow is carried to the west end of the basin. The rest of the runoff from the basin is intercepted by another drop inlet at the west end of the project. Then the runoff drains to the desilting pond within Tract 3A-1C-1 via a 42" RCP at a maximum discharge rate of 53 cfs.

Phase III (easterly portion of Basin D) development of Sun Healthcare Group, Inc. is being prepared by Bohannon Huston Inc. Their drainage basin management plan will be used to design the storm structures on Tract 3A-1C-. A copy of Sun Healthcare Inc. basin layout is enclosed in the map pocket.

FEMA Map and Soil Conditions

The site is located on FEMA Map section 350002 panel 9 as shown on the attached excerpt (sheet number 1.5 of this report). The map shows that the site does not lie within a 100-year flood plain. A 100-year flood plain is contained within the Pino Arroyo and lies adjacent to the site. Based on sheet number 11 of the Soil Conservation Service Soil Survey of Bernalillo County, the site contains one soil type. This soil is an Embudo gravelly fine sandy loam (EmB).

It has a moderate hazard of water erosion and runoff is medium. See attached soil map (sheet number 1.6 of this report).

On-site Drainage Management Plan

Under the proposed conditions, the overall pattern for the offsite drainage basins (B, C, & D) will remain the same. Also see the proposed Sun Healthcare Inc. basin layout prepared by Bohannon Huston Inc. enclosed in the map pocket. Based on Bohannon Huston's basin layout we have prepared an overall drainage basin layout. See attached "Proposed Basin Layout" exhibit (sheet number 1.8 of this report). Basins B, C, and a portion of D will surface flow to the easterly entrance of the tract at a maximum flow rate of 29.49 cfs. From that point, the runoff will drain to a proposed double "A" (DI-A4) inlet (with side sweepers on each side). The rest of Basin D drains to an existing drop inlet on the west end of Basin D and then to Tract 3A-1C-1 at a minimum flow rate of 31.20 cfs via a 42" RCP. See attached "Drop Inlet & Storm Sewer Manhole Locations" exhibit (sheet number 1.9 of this report).

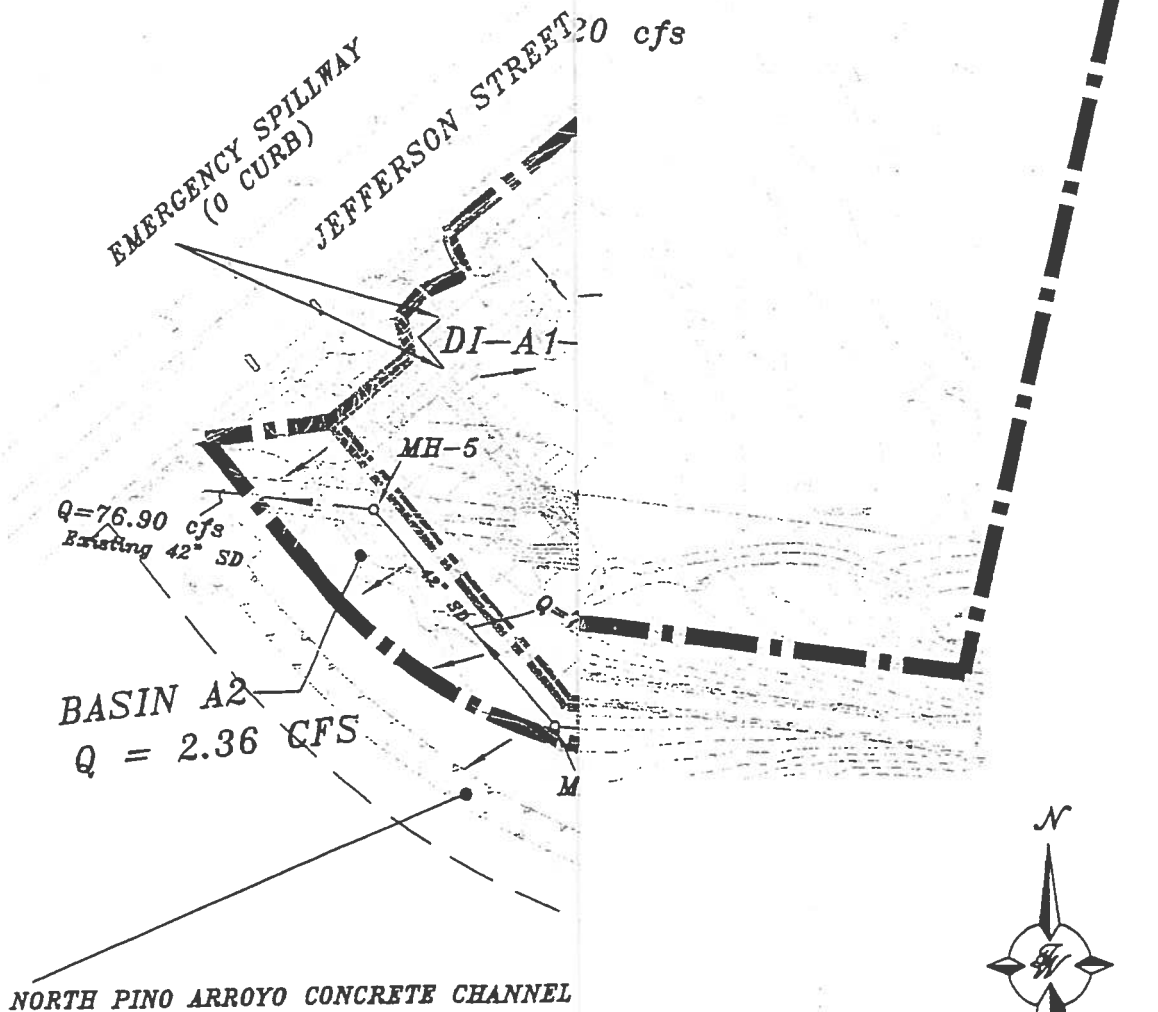
Basin A is further broken into four smaller sub-basins under the developed conditions. Sub-basin A1 drains to a single "D" (DI-A1) inlet at a flow rate of 13.45 cfs. The runoff then drains to MH-2 (a 6' diameter manhole) via an 18" storm drain pipe. Sub-basin A2, at a flow rate of 2.36 cfs, sheet flows to the North Pino Arroyo Concrete Channel. Sub-basin A3 (at a flow rate of 2.76 cfs) drains to a single "D" (DI-A3) inlet, and then drains to MH-1 (an 8' diameter manhole) via a 12" storm sewer pipe. Basin A4 (at a flow rate of 1.19 cfs) will drain to a double "A" (DI-A4) inlet, the same inlet that intercepts the offsite runoff at the east entrance of the site.

0 + 6.70 + 2.20 + 1.19

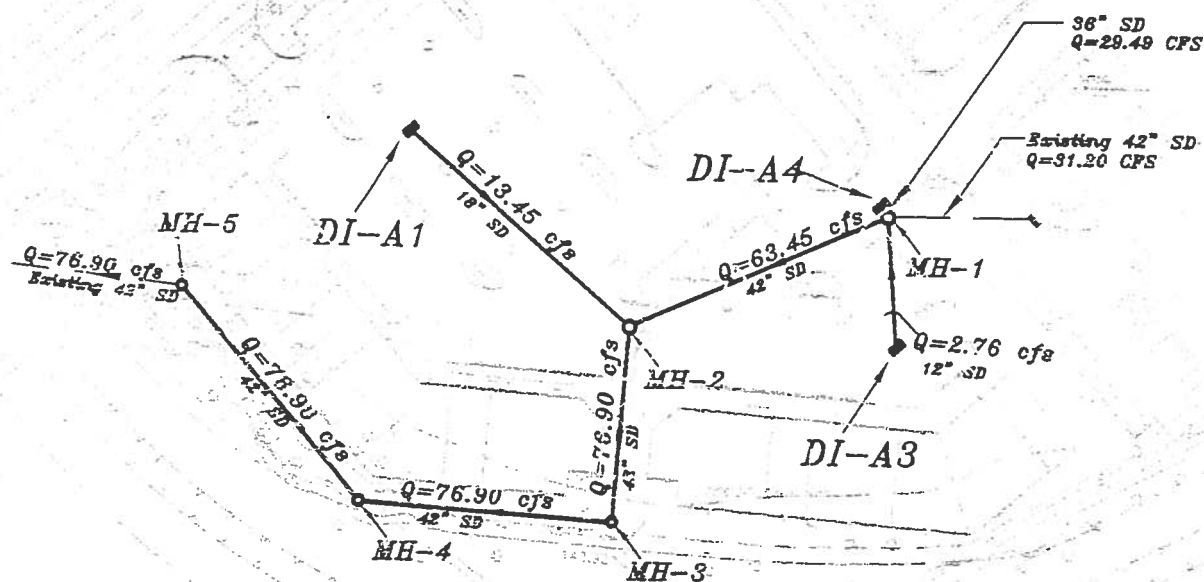
9 CFS

NOTE :

FLOW VALUES FOR BASINS B,
WERE OBTAIN FROM THE DRAI
UNDER CITY DRAINAGE NUMBE cfs



PAYOUT



DROP INLET & STORM SEWER MANHOLE LOCATIONS

From there, the runoff drains to MH-1 via a 36" storm drain pipe. Finally, the entire runoff is carried through a 42" RCP at a rate of 76.90 cfs. The 42" RCP has been reanalyzed for its capacity and the capacity calculations are included in this report. The existing discharge from the 42" RCP to the North Pino Arroyo Concrete Channel is at a discharge rate of 75 cfs (see attached copy of the storm sewer plan and profile sheet 5 of 7 under City Project number 4656.90 for runoff discharge rate to the channel). We are only exceeding the existing discharge by 1.90 cfs.

Phasing Plan

This site will be built in three phases. The entire storm sewer system will be built as part of Phase One. A desilting pond will be placed at the phase lines to intercept the silt from the undeveloped phases. Each of the desilting ponds will be eliminated upon development of each phase.

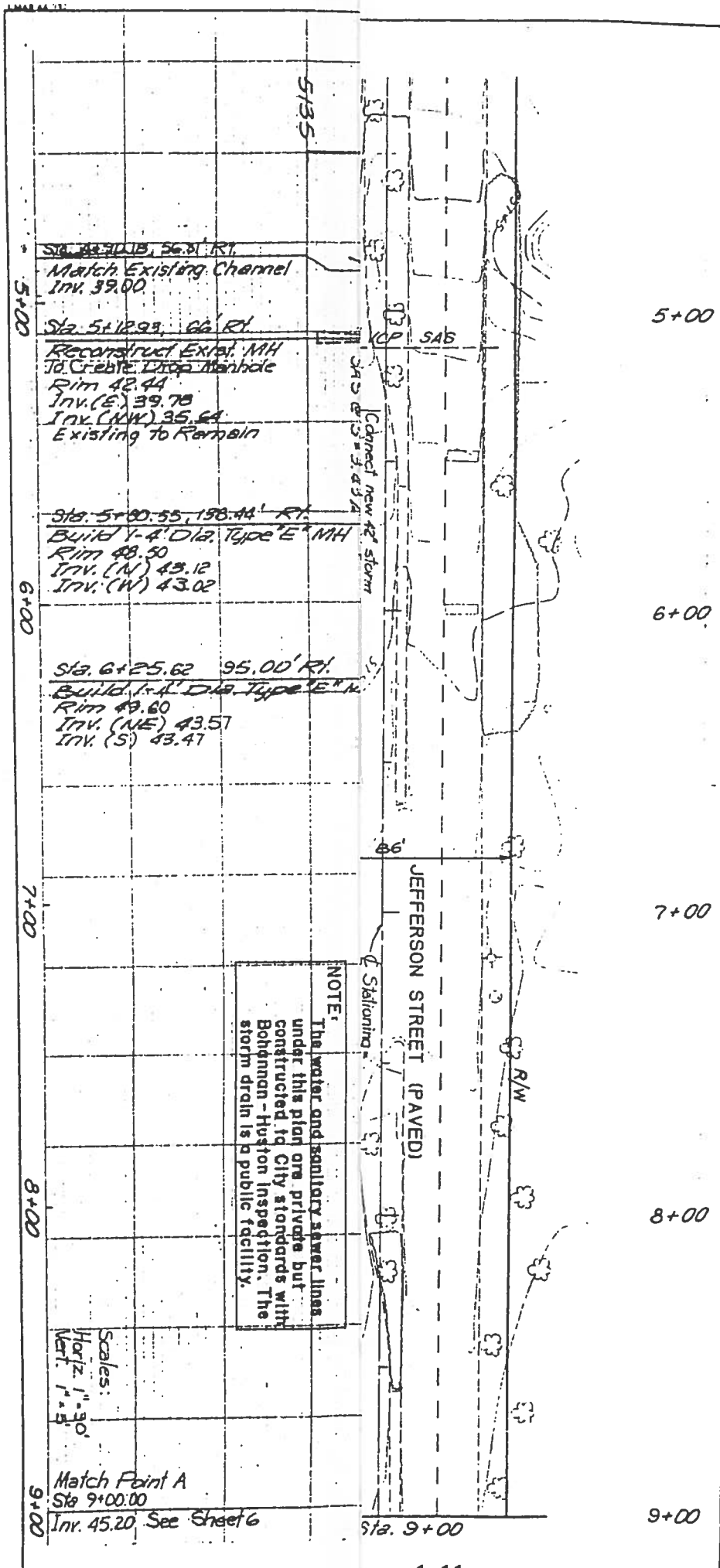
Summary

The site is part of Basin F of the Journal Center Master Drainage Plan. All of the offsite sub-basins within Basin F drain to Tract 3A-1C-1 through an existing storm sewer system or surface flow at a total developed flow rate of 59.50 cfs. All the offsite runoff sheet flowing to the site will be picked up at the intersection (subbasin A4) through a Double A inlet (with design flow of 29.49 cfs). The entire runoff drains to the North Pino Arroyo Concrete Channel via a 42" RCP at a developed rate of 76.90 cfs. Tract 3A-1C-1 (Basins B, C, & D) will drain the runoff to the 42" RCP via several drop inlets at a flow rate of 17.40 cfs. In the case of an emergency the runoff

20

B

12



backs up in the parking lot and drains out through the southwest end of the parking lot. See enclosed grading and drainage plan (in the map pocket) for emergency spillway location. The 42" RCP will be a public storm sewer pipe, and the necessary easement will be granted as part of the replat of this Tract. See enclosed sketch plat in the map pocket for easement location.

The following tables show the detailed runoff calculations for the site along with the AHYMO runs for review.

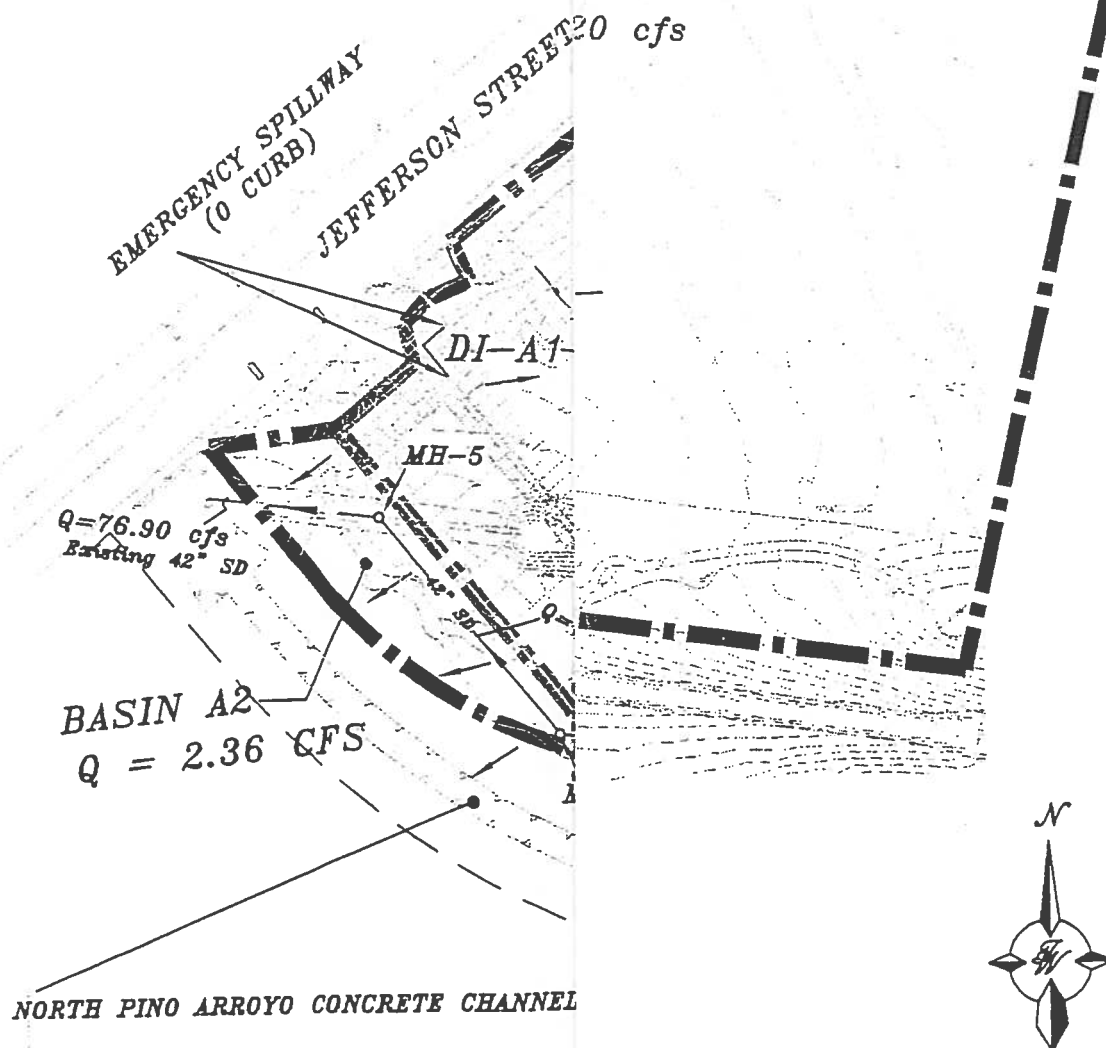
Hydrology Analysis

Hydrological Aspects of this site were evaluated using AMAFCA's AHYMO program according to guidelines presented in the City of Albuquerque DPM, Section 22.2 (January 1993). All of the pertinent hydrologic parameters and calculations are located on the following sheets.

0 + 6.70 + 2.20 + 1.19
 0 CFS

NOTE :

FLOW VALUES FOR BASINS B,
 WERE OBTAIN FROM THE DRAI
 UNDER CITY DRAINAGE NUMBE cfs



PAYOUT

SAMPLE CALCULATIONS FOR THE BASINS

The site is @ Zone 2

LAND TREATMENT

Treatment D:

D = 90 %

Treatment B:

B = 10 %

DEPTH (INCHES) @ 100-YEAR STORM

$P_{60} = 2.01$ inches

$P_{360} = 2.35$ inches

$P_{1440} = 2.75$ inches

DEPTH (INCHES) @ 10-YEAR STORM

$P_{60} = 2.01 \times 0.667$
 $= 1.34$ inches

$P_{360} = 1.57$

$P_{1440} = 1.83$

See the summary output from AHYMO calculations.

Also see the following summary tables.

RUNOFF SUMMARY TABLE

DRAINAGE BASINS

SUB-BASIN	AREA (SF)	AREA (AC)	AREA (MI ²)
A1	131283.61	3.0139	0.00471
A2	26759.55	0.6143	0.00096
A3	33966.71	0.7798	0.00122
A4	11465.57	0.2632	0.00041

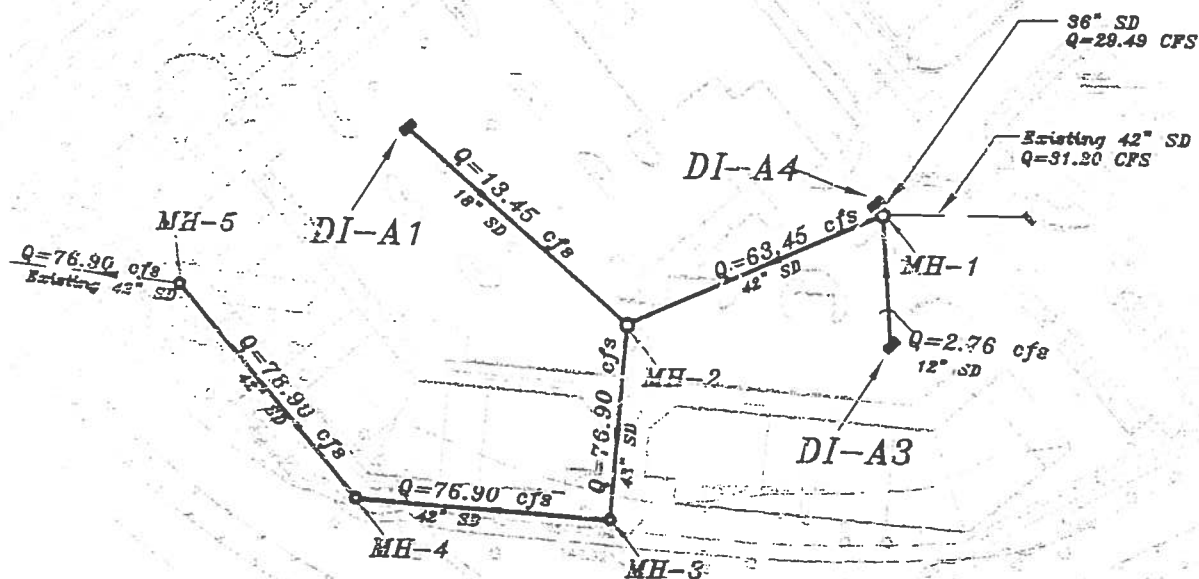
BASINS RUNOFF CALCULATION RESULTS

UNDER PROPOSED CONDITIONS

BASIN	Q-100 CFS	Q-10 CFS
A1	13.45	8.71
A2	2.36	1.23
A3	2.76	1.78
A4	1.19	0.77

UNDER EXISTING CONDITIONS

BASIN	Q-100 CFS	Q-10 CFS
A1	6.87	2.82
A2	1.98	0.9
A3	1.41	1.21
A4	0.61	0.52



DROP INLET & STORM SEWER MANHOLE LOCATIONS

STORM DRAIN INLET

EFFECTIVE AREA ASSUMING A 50% CLOGGING FACTOR

SINGLE 'D':

Area at the grate:

$$\begin{aligned} L &= 38.375'' - 7 (1/2'' \text{ middle bars}) & 40'' - 9(1/2'') &= 35.5'' & 41.375'' - 2(3'') \\ &= 34.875'' & &= 2.96' & = 35.375'' \\ &= 2.906' & & & = 2.95' \end{aligned}$$

$$\begin{aligned} W &= 25.5'' - 13 (1/2'' \text{ middle bars}) \\ &= 19'' \\ &= 1.583' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 1.583 \times 2.906 \\ &= 4.601 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= 4.601 - .5 (4.601) \text{ Clogging Factor} \\ &= 2.30 \text{ ft}^2 \text{ at the grate} \end{aligned}$$

DI - A1

$$Q = CA\sqrt{(2gh)}$$

$$Q = 13.45 \text{ cfs}, \quad A = 2.30 \text{ ft}^2$$

$$h = \left(\frac{Q}{CA} \right)^2 \frac{1}{2g}$$

$$\therefore h = 1.5'$$

DI - A3

$$Q = 2.76 \text{ cfs}, \quad A = 2.30 \text{ ft}^2$$

$$\therefore h = 0.1'$$

$$\begin{aligned} Q &= CLh^{3/2} \\ h &= \left(\frac{2.76}{3(1+3)2} \right)^{2/3} = 0.24' \end{aligned}$$

DOUBLE 'Grade' (For Double-A inlet)

Area at the grate:

$$\begin{aligned} L &= 76.75" - 14 (1/2" \text{ middle bars}) - 6" \text{ center piece} \\ &= 63.75" \\ &= 5.3125' \end{aligned}$$

$$\begin{aligned} W &= 25.5" - 13 (1/2" \text{ middle bars}) \\ &= 19" \\ &= 1.583' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 1.583' \times 5.3125' \\ &= 8.410 \text{ ft}^2 \end{aligned}$$

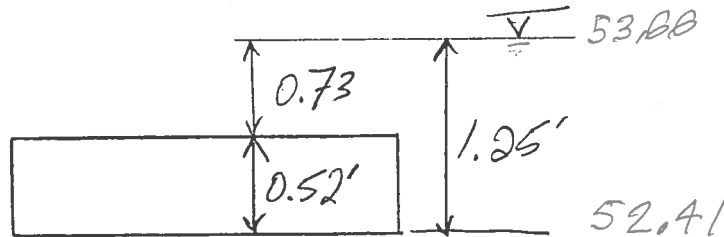
$$\begin{aligned} \text{Effective Area} &= 8.410 - .5 (8.410) \\ &= 4.21 \text{ ft}^2 \end{aligned}$$

Drop Inlet Capacity Calc. (DBL-A w/ Sweepers)
"For DT-A4" on each side.

Creating a Ponding depth of 1.2

Throat

Effective Area @ Throat = 7.03 SF = $0.52' \times 13.52'$

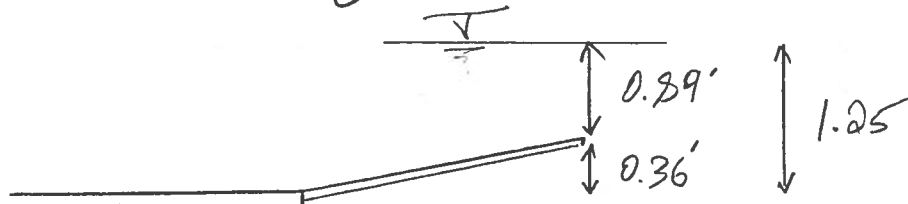


$$H = 0.52/2 + 0.73 = 0.99'$$

$$\begin{aligned} Q &= CA \sqrt{2gH} \\ &= 0.6(7.03) \sqrt{2 \times 32.2 \times 0.99} \\ &= 33.68 \text{ cfs} \end{aligned}$$

Grate

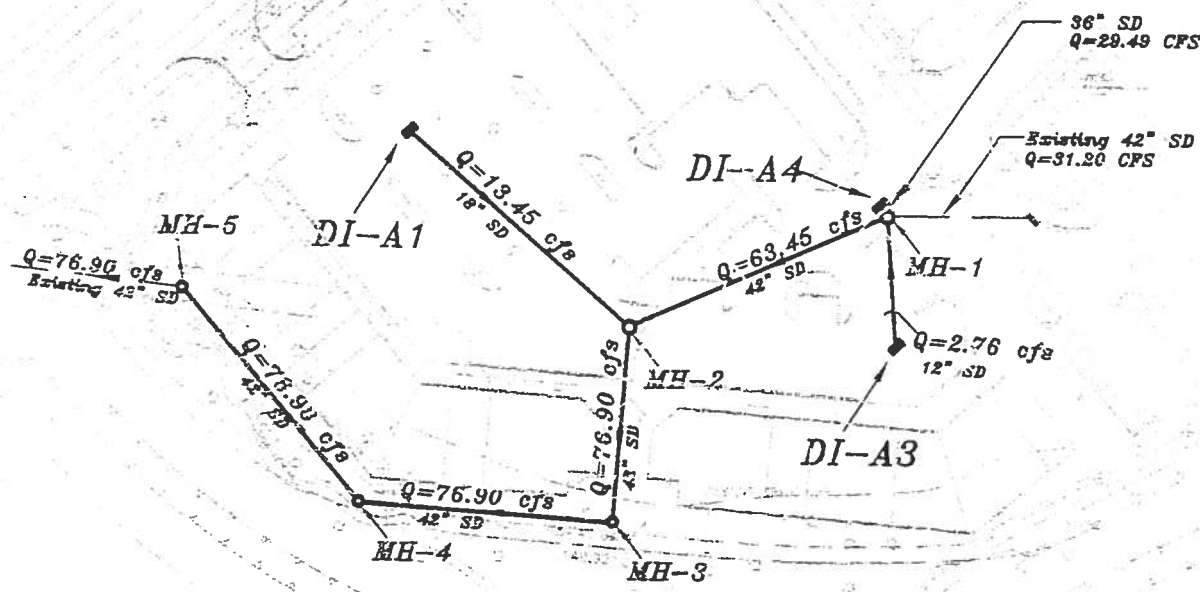
Effective Area @ Grate (Using 50% Clogging Factor) = 4.21 SF



$$H = 0.36/2 + 0.89 = 1.07'$$

$$\begin{aligned} Q &= 0.6(4.21) \sqrt{2 \times 32.2 \times 1.07} \\ &= 20.97 \text{ cfs} \end{aligned}$$

$$Q_T = 33.68 + 20.97 = 54.65 > 29.49$$



DROP INLET & STORM SEWER MANHOLE LOCATIONS

STORM DRAIN PIPE

DI-A4 TO MH-1 (36" RCP)

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

$$Q = 29.49 \text{ cfs}, \quad A = 7.07 \text{ ft}^2$$

$$h = \left(\frac{Q}{CA} \right)^2 \frac{1}{2g}$$

$$\therefore h = 0.75' \text{ (From the center of the pipe)}$$

$$\therefore \text{head from the invert of the pipe} = 0.75 + 1.50 = 2.25'$$

The total head provided (H) = 5 (from grate to bottom of inlet) + 1.25 (maximum ponding depth)

$$H = 6.25' > 2.25'$$

MH-1 TO MH-2 (42" RCP)

$$Q = 63.45 \text{ cfs}, \quad A = 9.62 \text{ ft}^2$$

$$\therefore h = 3.63' \text{ (From the center of the pipe)}$$

The total head provided (H) = 5' (From the center of the pipe)

DI-A1 TO MH-2 (18" RCP)

$$Q = 13.45 \text{ cfs}, \quad A = 1.77 \text{ ft}^2$$

$$\therefore h = 2.50' \text{ (From the center of the pipe)}$$

The total head provided (H) = 5.65' (From the center of the pipe)

DI-A3 TO MH-1 (12" PVC)

$$Q = 2.79 \text{ cfs}, \quad A = 0.79 \text{ ft}^2$$

$$\therefore h = 1.03' \text{ (From the center of the pipe)}$$

The total head provided (H) = 3.27' (From the center of the pipe)

MH-2 TO MH-3 TO MH-4 TO MH-5 TO CHANNEL (42" RCP)

$$Q = 76.90 \text{ cfs}, \quad A = 9.62 \text{ ft}^2$$

$$\therefore h = 2.76' \text{ (From the center of the pipe) -}$$

The total head provided (H) = 5' min. (From the center of the pipe)

EMERGENCY SPILLWAY CALCULATIONS

Width required for the emergency spillways:

$$Q = CLH^{3/2}$$

$$Q = (29.49 + 2.67 + 13.45) = 45.61 \text{ cfs}$$

$$H = 0.60' \rightarrow 0.5'$$

$$C = 3.10$$

L = ? (Width of the spillway/opening)

$$L = Q/CH^{3/2}$$

$$= 45.61 / (3.10 * 0.5^{3/2})$$

$$= 32.00' \rightarrow 41.6'$$

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
START											TIME= .00
RAINFALL TYPE= 1											RAIN6= 2.350
COMPUTE NM HYD	101.10	-	1	.00471	13.45	.498	1.98165	1.500	4.463 PER IMP=		90.00
COMPUTE NM HYD	101.20	-	1	.00122	2.36	.077	1.17935	1.500	3.025 PER IMP=		30.00
COMPUTE NM HYD	101.30	-	1	.00096	2.76	.101	1.98165	1.500	4.486 PER IMP=		90.00
COMPUTE NM HYD	101.40	-	1	.00041	1.19	.043	1.98165	1.500	4.526 PER IMP=		90.00
START											TIME= .00
RAINFALL TYPE= 1											RAIN6= 1.570
COMPUTE NM HYD	111.10	-	1	.00471	8.71	.309	1.23172	1.500	2.889 PER IMP=		90.00
COMPUTE NM HYD	111.20	-	1	.00122	1.23	.039	.59609	1.500	1.578 PER IMP=		30.00
COMPUTE NM HYD	111.30	-	1	.00096	1.78	.063	1.23172	1.500	2.902 PER IMP=		90.00
COMPUTE NM HYD	111.40	-	1	.00041	.77	.027	1.23172	1.500	2.923 PER IMP=		90.00
START											TIME= .00
RAINFALL TYPE= 1											RAIN6= 2.350
COMPUTE NM HYD	102.10	-	1	.00471	6.87	.195	.77821	1.533	2.280 PER IMP=		.00
COMPUTE NM HYD	102.20	-	1	.00122	1.98	.059	.91192	1.500	2.540 PER IMP=		10.00
COMPUTE NM HYD	102.30	-	1	.00096	1.41	.040	.77821	1.533	2.291 PER IMP=		.00
COMPUTE NM HYD	102.40	-	1	.00041	.61	.017	.77821	1.533	2.308 PER IMP=		.00
START											TIME= .00
RAINFALL TYPE= 1											RAIN6= 1.570
COMPUTE NM HYD	112.10	-	1	.00471	2.82	.070	.27828	1.533	.936 PER IMP=		.00
COMPUTE NM HYD	112.20	-	1	.00122	.90	.025	.38422	1.533	1.148 PER IMP=		10.00
COMPUTE NM HYD	112.30	-	1	.00096	1.21	.040	.78009	1.500	1.963 PER IMP=		47.37
COMPUTE NM HYD	112.40	-	1	.00041	.52	.017	.78009	1.500	1.985 PER IMP=		47.37
FINISH											