CITY OF ALBUQUERQUE

May 13, 2015

Reza Afaghpour, PE
through SBS Construction and Engineering, LLC
10209 Snowflake Court NW
Albuquerque, NM 87114

RE: **Lot 7, Unit 3, Broadway Industrial Center, 2520 Karsten Ct.**
Grading and Drainage Plan
Engineer's Stamp Date 5-12-2015 (File: M14-D004D)

Dear Mr. Afaghpour:

Based upon the information provided in your submittal received 4-18-15, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan in the construction sets when submitting for a building permit.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM Checklist will be required. Additionally, it will be required to submit the construction work within COA right-of-way through the DRC Process.

If you have any questions, you can contact me at 924-3924.

Sincerely,

Jeanne Wolfenbarger, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf Addressee via Email

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: LOT 7, UNIT 3, BROADWAY INDUSTRIAL CENTER Building Permit #: _____ City Drainage #: M14-D004D

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOT 7, UNIT 3, BROADWAY INDUSTRIAL CENTER

City Address: 2520 KARSTEN CT., SE

Engineering Firm: SBS CONSTRUCTION AND ENGINEERING, LLC Contact: SHAWN BIAZAR

Address: 10209 SNOWFLAKE CT., NW, ALBUQUERQUE, NM 87114

Phone#: 505-804-5013 Fax#: 505-897-4996 E-mail: AECLLC@AOL.COM

Owner: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Architect: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- X DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ____ ENGINEER'S CERT (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERT (TCL)
- ____ ENGINEER'S CERT (DRB SITE PLAN)
- ____ ENGINEER'S CERT (ESC)
- ____ SO-19
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ____ SIA/FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ____ FOUNDATION PERMIT APPROVAL
- X BUILDING PERMIT APPROVAL
- X GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ GRADING CERTIFICATION
- ____ SO-19 APPROVAL
- ____ ESC PERMIT APPROVAL
- ____ ESC CERT. ACCEPTANCE
- ____ OTHER (SPECIFY)

RECEIVED
APR 22 2015
LAND DEVELOPMENT SECTION

rs verified

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes ____ No ____ Copy Provided

DATE SUBMITTED: 4/18/2015 By: SHAWN BIAZAR

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

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 subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

SBS CONSTRUCTION AND ENGINEERING, LLC

April 18, 2015

Mrs. Jeanne Wolfenbarger, P. E.
Senior Engineer, Planning Dept.
Development Review Services
P. O. Box 1293, 600 Second Street, NW
Albuquerque, NM 87103

RE: **Lot 7, Unit 3, Broadway Industrial Center, 2520 Karsten Ct.**
Grading and Drainage Plan (M14D004D) Responses to Comments Dated April 3-2015

Dear Mrs. Wolfenbarger:

The following are the responses to your comments received dated April 3, 2015:

1) Bench Mark information and spot elevations along the entire site perimeter were added to the plan.
2) We will be controlling the discharge to the 24" SD pipe by using 15" diameter orifice plate. Therefore, the maximum discharge form the site will be at 14.07 cfs which is less than the allowable discharge of 14.32 cfs. Please see the attached revised pond calculations and AHYMO runs.

3) See previous response.

4) Top wall is at proposed grade or slightly higher. Bottom of the wall elevation is added. Bottom of the wall elevations matches existing elevations. There is an existing fence to the west and to the south. There are no surveying points beyond the fence line. Spot elevations are included to verify the existing elevations along the property line. The proposed contours were slightly changed at the far northwest corner. The retaining wall extended to the east, closer to the access to the site. The existing spot elevations are shown at the property line at the existing access easement. These grades are being maintained under the proposed conditions.

5) Riprap dimensions, sizing and depth are added to the plan.

6) A 14'x41' grouted riprap area is shown where runoff from the site enters the pond.

7) Proposed 100-year flows for the proposed 18" (6.32 cfs) and 36" (73.21 cfs) storm drain pipe are shown on the plan. Since the pipes are going to be under pressure, orifice equation ($Q = CA\sqrt{2gh}$) was used to calculate the capacity of the 18" (21.78 cfs) and 36" (88.10 cfs) pipes. There is an existing Double-D inlet that has been built to intercept the runoff form Lot 8 (39.83

10209 SNOWFLAKE CT., NW, ALBUQUERQUE, NM 87114 PH (505) 804-5013 FAX (505) 897-4996 EMAIL AECLLC@AOL.COM

cfs) which is not shown on the Mater Drainage plan. The inlet discharges the runoff to the existing pond via 24" storm drain pipe. The 24" pipe has a capacity of 45.78 cfs. The proposed flows of each of the existing pipes along with the capacity of the each pipe was obtain from the Master Drainage plan and was added to the grading and drainage plan.

8) The existing pipe near Karsten Ct. is an 18" pipe. We had shown it as 24" pipe. A bend is proposed at this connection and is shown on the plan.

9) The 30' existing private access easement is added to the plan. Slope spelling was corrected.

10) Proposed parking lot will be with asphalt milling.

11) The narrative of the Basin 104 through 107 being along I-25 embankment, and other contributing lots surrounding Karsten Ct. was added to the narrative of the plan. Existing Master Drainage plan was referenced for details on the contributing basins to the existing storm drain pipes. A copy of the Master plan was provided with our previous submittal.

Please Contact me at (505) 804-5013 if you require additional information or have any questions.

Sincerely,

Shahram (Shawn) Biazar, Managing Member

Enclosures
JN: 201423

10209 SNOWFLAKE CT., NW, ALBUQUERQUE, NM 87114 PH (505) 804-5013 FAX (505) 897-4996 EMAIL AECLLC@AOL.COM

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.

2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.

3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL FOR LOCATING SERVICE, 260-1990 OR "811", FOR LOCATION OF EXISTING UTILITIES.

4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.

6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.

7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVALS	NAME	DATE
INSPECTOR		

GENERAL NOTES:

1: CONTOUR INTERVAL IS HALF (1.00) FOOT.
2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE CONTROL STATION 8_B14, HAVING AN ELEVATION OF 5025.358 FEET ABOVE SEA LEVEL.
3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.
4: THIS IS NOT A BOUNDARY SURVEY, BEARINGS ARE ASSUMED, DISTANCES AND FOUND PROPERTY CORNERS ARE FOR INFORMATIONAL PURPOSES ONLY.
5: SLOPES ARE AT 3:1 MAXIMUM.
6: MOBILE HOMES ARE FOR STAORAGE ONLY AND SHALL BE 36" ABOVE GROUND.

Location
Lot 7, Unit 3, Broadway Industrial Center is located at 2500 Karsten Ct., SE, and contains +/- 2.1445 Acres. See attached portion of the Vicinity Map for exact location.

Purpose
The purpose of this drainage report is to present a grading and drainage solution to reduce the ponding area for the existing Lot.

Existing Drainage Conditions
This site falls within Master Drainage Plan for the Broadway Industrial Center, Unit 3 (M14/D004) prepared by Mark Goodwin and Associates. Basin 104 through 107 are along I-25 embankment, and other contributing lots surround Karsten Ct. See existing Master Drainage plan details on the contributing basins to the existing storm drain pipes. A copy of the Master plan was provided with our previous submittal. The site is being used as a retention pond where intercepts the offsite runoff from several Basins shown the Master Plan.

Proposed Conditions and On-Site Drainage Management Plan
Since the downstream storm drain system is completed, we are proposing to change the existing pond from a Retention Pond to a Detention Pond. Therefore, under the proposed conditions the pond will detain all the offsite runoff and drain it at a flow rate of 14.07 cfs via an existing 24" pipe and at a 100-year water surface elevation of 5005.18'. The pond will also be a retention pond from elevation 4997.00 to 4998.50 (retention volume at 4,506.34 cf) to retain the first flush with volume requirement of 2,170.33 cf.

Calculations
City of Albuquerque, Development Process Manuel, Section 22.2, Hydrology Section, was used for runoff calculations. See this plan for AHYMO input and Summary output files.

NOTICE TO CONTRACTORS

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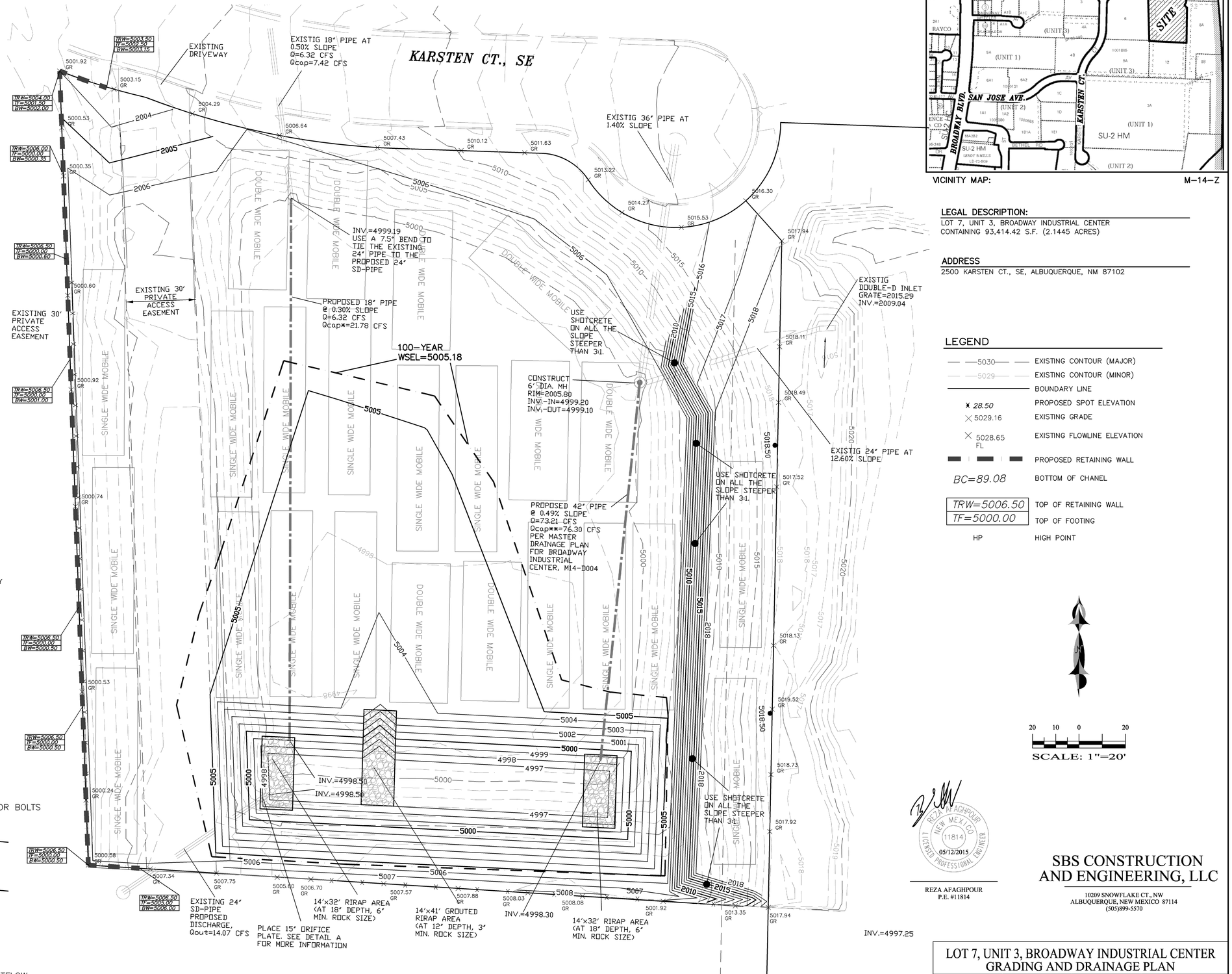
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.

4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.

6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.

7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.



VICINITY MAP: M-14-Z

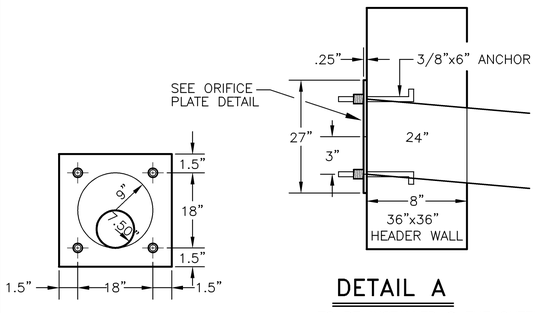
LEGAL DESCRIPTION:
LOT 7, UNIT 3, BROADWAY INDUSTRIAL CENTER
CONTAINING 93,414.42 S.F. (2.1445 ACRES)

ADDRESS
2500 KARSTEN CT., SE, ALBUQUERQUE, NM 87102

LEGEND

5030	EXISTING CONTOUR (MAJOR)
5029	EXISTING CONTOUR (MINOR)
	BOUNDARY LINE
x 28.50	PROPOSED SPOT ELEVATION
x 5029.16	EXISTING GRADE
x 5028.65 FL	EXISTING FLOWLINE ELEVATION
	PROPOSED RETAINING WALL
BC=89.08	BOTTOM OF CHANEL
TRW=5006.50	TOP OF RETAINING WALL
TF=5000.00	TOP OF FOOTING
HP	HIGH POINT

SCALE: 1"=20'



DETAIL A
TO BE INSTALLED @ THE OUTFLOW OF ALL CATCH BASINS (SEE TABLE FOR ORFICE PLATE SIZES)

TYP. ORIFICE PLATE DETAIL
N.T.S.

* PIPE WIL BE UNDER PRESSURE. ORIFICE EQUATION WAS USED TO CALCULATE PIPE FLOW CAPAPCITY.

REZA AFAGHPOUR
NEW MEXICO
11814
LICENSED PROFESSIONAL ENGINEER
05/12/2015

REZA AFAGHPOUR
P.E. #11814

SBS CONSTRUCTION AND ENGINEERING, LLC
10209 SNOWFLAKE CT., NW
ALBUQUERQUE, NEW MEXICO 87114
(505)899-5570

LAST REVISION: 05-12-15

LOT 7, UNIT 3, BROADWAY INDUSTRIAL CENTER GRADING AND DRAINAGE PLAN

DRAWING:	DRAWN BY:	DATE:	SHEET #
201503-GD.DWG	SB	03-08-2015	1 OF 1

Contributing Basins To Lot 7*

BASIN	AREA (AC-FT)	AREA (MI^2)	% D	ID	Q
104		0.00630	10	1	12.94
105		0.00508	30	2	11.45
106B		0.00389	10	3	7.99
107		0.00395	30	4	8.90
LOT 7	2.1445	0.00335	90	5	9.42
LOT 8	4.0951	0.00640	90	6	17.99
LOT 9	3.1720	0.00496	90	7	13.94
LOT 10	1.4426	0.00225	90	8	6.32

* Basins From Drainage Masterplan For Broadway Industrial Center Unit 3 (M14/D004) Prepared By Mark Goodwin and Associates.

PIPE FLOW CAPACITY CALCULATIONS

Flow capacity calculations were done using the orifice equation

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

Existing 24" Pipe

h (head) = 8.96'
A = 3.1416 sf
g = 32.20

$Q = 0.60 \times 3.1416 \times \sqrt{(2 \times 32.2 \times 8.96)} =$ ***45.28 cfs***

Proposed 36" Pipe

h (head) = 6.70'
A = 7.0685sf
g = 32.20

$Q = 0.60 \times 7.0685 \times \sqrt{(2 \times 32.2 \times 6.70)} =$ ***88.10 cfs***

Proposed 18" Pipe

h (head) = 6.55'
A = 1.7671 sf
g = 32.20

$Q = 0.60 \times 1.7671 \times \sqrt{(2 \times 32.2 \times 6.55)} =$ ***21.78 cfs***

Ponding Calculation

Actual Elev.	Depth (ft)	Volume (ac-ft)	Q (cfs)	Surface Area (sf)
4997.00	0.00	0.00000	0.00	2,927.20
4998.50	0.00	0.12799	0.00	4,506.34
5000.00	1.50	0.31315	4.18	6,247.81
5002.00	3.50	0.65911	9.34	8,822.26
5003.00	4.50	0.87766	11.05	10,217.69
5004.00	5.50	1.13910	12.53	12,559.32
5005.00	6.50	1.75644	13.85	41,223.21
5006.00	7.50	3.07605	15.06	73,741.05

Q=CA SQRT(2gH)

C =	0.6
Orifice Dia. (in) =	15
A (sf) =	1.227

```
* ZONE 2
*****************************************************************
*        100-YEAR,  6-HR STORM (UNDER PROPOPOSED CONDITIONS)     *
*****************************************************************
START               TIME=0.0
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                    RAIN DAY=2.75 IN DT=0.03333 HR
* BASIN 104
COMPUTE NM HYD      ID=1 HYD NO=104.0 AREA=0.00630 SQ MI
                    PER A=0.00 PER B=10.00 PER C=80.00 PER D=10.00
                    TP=0.1333 HR MASS RAINFALL=-1
* BASIN 105
COMPUTE NM HYD      ID=2 HYD NO=105.0 AREA=0.00508 SQ MI
                    PER A=0.00 PER B=10.00 PER C=60.00 PER D=30.00
                    TP=0.1333 HR MASS RAINFALL=-1
* BASIN 106B
COMPUTE NM HYD      ID=3 HYD NO=106.0 AREA=0.00389 SQ MI
                    PER A=0.00 PER B=10.40 PER C=79.60 PER D=10.00
                    TP=0.1333 HR MASS RAINFALL=-1
* BASIN 107
COMPUTE NM HYD      ID=4 HYD NO=107.0 AREA=0.00395 SQ MI
                    PER A=0.00 PER B=10.20 PER C=59.8 PER D=30.00
                    TP=0.1333 HR MASS RAINFALL=-1
* LOT 7
COMPUTE NM HYD      ID=5 HYD NO=100.7 AREA=0.00335 SQ MI
                    PER A=9.70 PER B=0.00 PER C=0.30 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* LOT 8
COMPUTE NM HYD      ID=6 HYD NO=100.8 AREA=0.00640 SQ MI
                    PER A=9.50 PER B=0.00 PER C=0.50 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* LOT 9
COMPUTE NM HYD      ID=7 HYD NO=100.9 AREA=0.00496 SQ MI
                    PER A=9.70 PER B=0.00 PER C=0.30 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
* LOT 10
COMPUTE NM HYD      ID=8 HYD NO=100.10 AREA=0.00225 SQ MI
                    PER A=10.10 PER B=0.00 PER C=0.00 PER D=89.90
                    TP=0.1333 HR MASS RAINFALL=-1
*
* ADD BASINS 104 & 105
ADD HYD             ID=10 HYD NO=104.10 ID=1 ID=2
*
* ADD BASINS 106B & ID=10
ADD HYD             ID=20 HYD NO=106.10 ID=10 ID=3
*
* ADD BASINS 107 & ID=20
ADD HYD             ID=30 HYD NO=107.10 ID=20 ID=4
*
* ADD LOT 7 & ID=30
ADD HYD             ID=40 HYD NO=100.71 ID=30 ID=5
*
* ADD LOT 8 & ID=40
ADD HYD             ID=50 HYD NO=100.81 ID=40 ID=6
*
* ADD LOT 9 & ID=50
ADD HYD             ID=60 HYD NO=100.91 ID=50 ID=7
*
* ADD LOT 10 & ID=60
ADD HYD             ID=70 HYD NO=100.11 ID=60 ID=8
*
ROUTE RESERVOIR     ID=100 HYD NO=501.1 INFLOW ID=70 CODE=24
                    OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                        0.00              0.00000      4998.50
                       10.69              0.31315      5000.00
                       23.91              0.65911      5002.00
                       28.29              0.87766      5003.00
                       32.07              1.13910      5004.00
                       35.46              1.75644      5005.00
                       38.55              3.07605      5006.00
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FINISH
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RAINFALL TYPE= 1										RAIN6=	2.350
COMPUTE NM HYD	104.00	-	1	.00630	12.94	.398	1.18529	1.500	3.209	PER IMP=	10.00
COMPUTE NM HYD	105.00	-	2	.00508	11.45	.375	1.38298	1.500	3.521	PER IMP=	30.00
COMPUTE NM HYD	106.00	-	3	.00389	7.99	.246	1.18367	1.500	3.208	PER IMP=	10.00
COMPUTE NM HYD	107.00	-	4	.00395	8.90	.291	1.38218	1.500	3.521	PER IMP=	30.00
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COMPUTE NM HYD	100.90	-	7	.00496	13.94	.518	1.95825	1.500	4.391	PER IMP=	90.00
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ADD HYD	106.10	10& 3	20	.01527	32.37	1.018	1.25059	1.500	3.312		
ADD HYD	107.10	20& 4	30	.01922	41.27	1.310	1.27762	1.500	3.355		
ADD HYD	100.71	30& 5	40	.02257	50.69	1.660	1.37863	1.500	3.509		
ADD HYD	100.81	40& 6	50	.02897	68.69	2.328	1.50686	1.500	3.705		
ADD HYD	100.91	50& 7	60	.03393	82.63	2.846	1.57284	1.500	3.805		
ADD HYD	100.11	60& 8	70	.03618	88.95	3.081	1.59662	1.500	3.841		
ROUTE RESERVOIR	501.10	70	**	.03618	14.07	3.081	1.59662	2.100	.608	AC-FT=	1.994
FINISH											

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         INPUT FILE = df.txt


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    ***************************************************************
    *        100-YEAR,  6-HR STORM (UNDER PROPOPOSED CONDITIONS)     *
    ***************************************************************
    START                TIME=0.0
    RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                         RAIN DAY=2.75 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
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                       .0000   .0016   .0033   .0049   .0066   .0084   .0102
                       .0120   .0139   .0158   .0178   .0199   .0219   .0241
                       .0263   .0286   .0309   .0333   .0358   .0384   .0411
                       .0439   .0467   .0497   .0529   .0561   .0596   .0631
                       .0669   .0709   .0751   .0807   .0866   .0930   .1066
                       .1371   .1840   .2514   .3434   .4644   .6186   .8106
                      1.0449  1.2624  1.3533  1.4300  1.4982  1.5602  1.6174
                      1.6704  1.7200  1.7664  1.8102  1.8514  1.8904  1.9273
                      1.9622  1.9953  2.0268  2.0566  2.0850  2.0915  2.0976
                      2.1033  2.1088  2.1140  2.1191  2.1239  2.1285  2.1329
                      2.1373  2.1414  2.1454  2.1494  2.1531  2.1568  2.1604
                      2.1639  2.1673  2.1706  2.1739  2.1771  2.1802  2.1832
                      2.1862  2.1891  2.1919  2.1947  2.1975  2.2002  2.2028
                      2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                      2.2225  2.2248  2.2270  2.2293  2.2315  2.2336  2.2358
                      2.2379  2.2399  2.2420  2.2440  2.2460  2.2480  2.2500
                      2.2519  2.2538  2.2557  2.2576  2.2594  2.2612  2.2631
                      2.2648  2.2666  2.2684  2.2701  2.2718  2.2735  2.2752
                      2.2769  2.2785  2.2802  2.2818  2.2834  2.2850  2.2866
                      2.2881  2.2897  2.2912  2.2928  2.2943  2.2958  2.2973
                      2.2987  2.3002  2.3017  2.3031  2.3045  2.3060  2.3074
                      2.3088  2.3102  2.3115  2.3129  2.3143  2.3156  2.3169
                      2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
                      2.3273  2.3286  2.3298  2.3311  2.3323  2.3335  2.3348
                      2.3360  2.3372  2.3384  2.3396  2.3408  2.3419  2.3431
                      2.3443  2.3454  2.3466  2.3477  2.3488  2.3500

    * BASIN 104
    COMPUTE NM HYD       ID=1 HYD NO=104.0 AREA=0.00630 SQ MI
                         PER A=0.00 PER B=10.00 PER C=80.00 PER D=10.00
                         TP=0.1333 HR MASS RAINFALL=-1

         K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
         UNIT PEAK =   2.4873    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 = 2.0100

         AREA =      .000630 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


         K =   .110184HR    TP =   .133300HR    K/TP RATIO =   .826586     SHAPE CONSTANT, N =
4.318134
         UNIT PEAK =   15.987    CFS   UNIT VOLUME =    .9995       B =   375.85      P60 = 2.0100

         AREA =      .005670 SQ MI    IA =    .36667 INCHES    INF =    .87667 INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    * BASIN 105
    COMPUTE NM HYD       ID=2 HYD NO=105.0 AREA=0.00508 SQ MI
                         PER A=0.00 PER B=10.00 PER C=60.00 PER D=30.00
                         TP=0.1333 HR MASS RAINFALL=-1

         K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
         UNIT PEAK =   6.0168    CFS   UNIT VOLUME =    .9976       B =   526.28      P60 = 2.0100
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          AREA =      .001524 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .110966HR    TP =   .133300HR    K/TP RATIO =   .832455     SHAPE CONSTANT, N =
4.284601
          UNIT PEAK =   9.9696    CFS   UNIT VOLUME =    .9990       B =   373.72      P60 = 2.0100

          AREA =      .003556 SQ MI    IA =    .37143 INCHES    INF =    .89000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     * BASIN 106B
     COMPUTE NM HYD      ID=3 HYD NO=106.0 AREA=0.00389 SQ MI
                         PER A=0.00 PER B=10.40 PER C=79.60 PER D=10.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
          UNIT PEAK =   1.5358    CFS   UNIT VOLUME =    .9922       B =   526.28      P60 = 2.0100

          AREA =      .000389 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .110293HR    TP =   .133300HR    K/TP RATIO =   .827408     SHAPE CONSTANT, N =
4.313397
          UNIT PEAK =   9.8635    CFS   UNIT VOLUME =    .9990       B =   375.55      P60 = 2.0100

          AREA =      .003501 SQ MI    IA =    .36733 INCHES    INF =    .87853 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     * BASIN 107
     COMPUTE NM HYD      ID=4 HYD NO=107.0 AREA=0.00395 SQ MI
                         PER A=0.00 PER B=10.20 PER C=59.8 PER D=30.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
          UNIT PEAK =   4.6784    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 2.0100

          AREA =      .001185 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .111037HR    TP =   .133300HR    K/TP RATIO =   .832983     SHAPE CONSTANT, N =
4.281607
          UNIT PEAK =   7.7480    CFS   UNIT VOLUME =    .9986       B =   373.53      P60 = 2.0100

          AREA =      .002765 SQ MI    IA =    .37186 INCHES    INF =    .89120 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     * LOT 7
     COMPUTE NM HYD      ID=5 HYD NO=100.7 AREA=0.00335 SQ MI
                         PER A=9.70 PER B=0.00 PER C=0.30 PER D=90.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
          UNIT PEAK =   11.903    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 2.0100

          AREA =      .003015 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .158573HR    TP =   .133300HR    K/TP RATIO =  1.189596     SHAPE CONSTANT, N =
2.985007
          UNIT PEAK =   .70518    CFS   UNIT VOLUME =    .9791       B =   280.60      P60 = 2.0100

          AREA =      .000335 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     * LOT 8
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```
     COMPUTE NM HYD       ID=6 HYD NO=100.8 AREA=0.00640 SQ MI
                          PER A=9.50 PER B=0.00 PER C=0.50 PER D=90.00
                          TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
          UNIT PEAK =   22.741    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 2.0100

          AREA =      .005760 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .157519HR    TP =   .133300HR    K/TP RATIO =  1.181688     SHAPE CONSTANT, N =
3.003448
          UNIT PEAK =   1.3544    CFS   UNIT VOLUME =    .9890       B =   282.10      P60 = 2.0100

          AREA =      .000640 SQ MI    IA =    .63500 INCHES    INF =   1.62800 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     * LOT 9
     COMPUTE NM HYD       ID=7 HYD NO=100.9 AREA=0.00496 SQ MI
                          PER A=9.70 PER B=0.00 PER C=0.30 PER D=90.00
                          TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
          UNIT PEAK =   17.624    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 2.0100

          AREA =      .004464 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .158573HR    TP =   .133300HR    K/TP RATIO =  1.189596     SHAPE CONSTANT, N =
2.985007
          UNIT PEAK =   1.0441    CFS   UNIT VOLUME =    .9862       B =   280.60      P60 = 2.0100

          AREA =      .000496 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     * LOT 10
     COMPUTE NM HYD       ID=8 HYD NO=100.10 AREA=0.00225 SQ MI
                          PER A=10.10 PER B=0.00 PER C=0.00 PER D=89.90
                          TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =
7.106420
          UNIT PEAK =   7.9859    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 2.0100

          AREA =      .002023 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .160154HR    TP =   .133300HR    K/TP RATIO =  1.201459     SHAPE CONSTANT, N =
2.957910
          UNIT PEAK =   .47457    CFS   UNIT VOLUME =    .9696       B =   278.37      P60 = 2.0100

          AREA =      .000227 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     *
     * ADD BASINS 104 & 105
     ADD HYD              ID=10 HYD NO=104.10 ID=1 ID=2
     *
     * ADD BASINS 106B & ID=10
     ADD HYD              ID=20 HYD NO=106.10 ID=10 ID=3
     *
     * ADD BASINS 107 & ID=20
     ADD HYD              ID=30 HYD NO=107.10 ID=20 ID=4
     *
     * ADD LOT 7 & ID=30
     ADD HYD              ID=40 HYD NO=100.71 ID=30 ID=5
     *
     * ADD LOT 8 & ID=40
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ADD HYD             ID=50 HYD NO=100.81 ID=40 ID=6
*
* ADD LOT 9 & ID=50
ADD HYD             ID=60 HYD NO=100.91 ID=50 ID=7
*
* ADD LOT 10 & ID=60
ADD HYD             ID=70 HYD NO=100.11 ID=60 ID=8
*
ROUTE RESERVOIR     ID=100 HYD NO=501.1 INFLOW ID=70 CODE=24
                    OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                        0.00              0.00000      4998.50
                        4.18              0.31315      5000.00
                        9.34              0.65911      5002.00
                       11.05              0.87766      5003.00
                       12.53              1.13910      5004.00
                       13.85              1.75644      5005.00
                       15.06              3.07605      5006.00

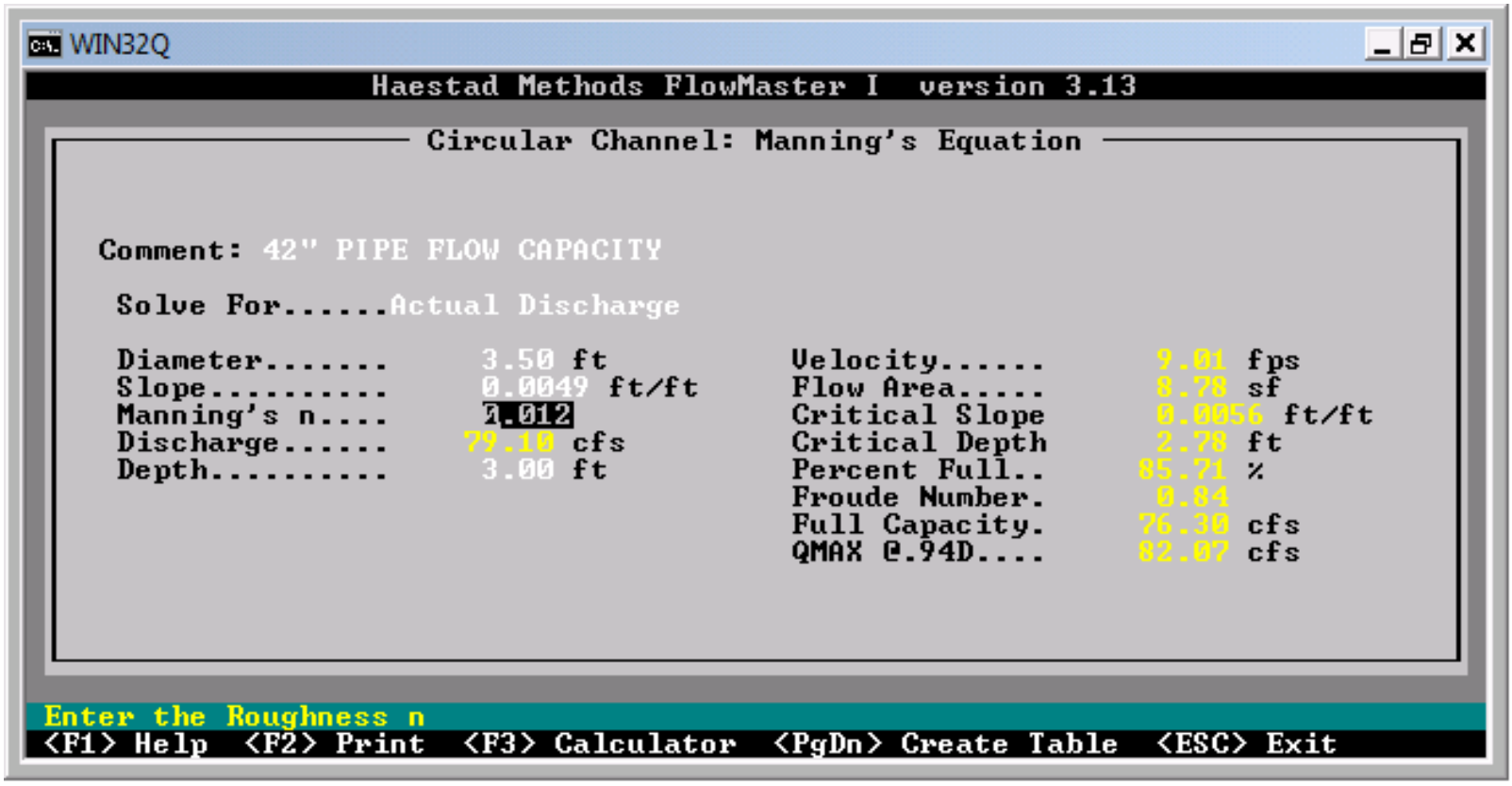
  * * * * * * * * * * * * * * * * * *

    TIME       INFLOW     ELEV       VOLUME     OUTFLOW
    (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

      .00         .00   4998.50        .000        .00
      .80         .00   4998.50        .000        .00
     1.60       63.50   5004.32       1.338      12.96
     2.40        3.37   5005.04       1.805      13.89
     3.20         .58   5003.60       1.034      11.93
     4.00         .34   5000.76        .445       6.14
     4.80         .33   4999.44        .197       2.63
     5.60         .37   4998.96        .097       1.29
     6.40         .03   4998.74        .051        .68
     7.20         .00   4998.60        .021        .28
     8.00         .00   4998.54        .009        .12
     8.80         .00   4998.52        .004        .05
     9.60         .00   4998.51        .002        .02
    10.40         .00   4998.50        .001        .01
    11.20         .00   4998.50        .000        .00
 PEAK DISCHARGE =       14.068 CFS - PEAK OCCURS AT HOUR    2.10
 MAXIMUM WATER SURFACE ELEVATION =     5005.180
 MAXIMUM STORAGE =        1.9937 AC-FT      INCREMENTAL TIME=     .033330HRS

**********************************************************************
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 22:47:58
```


WIN32Q
Haestad Methods FlowMaster I version 3.13
Circular Channel: Manning's Equation
Comment: 42" PIPE FLOW CAPACITY
Solve For.....Actual Discharge
Diameter..... 3.50 ft
Slope..... 0.0049 ft/ft
Manning's n.... 0.012
Discharge..... 79.10 cfs
Depth..... 3.00 ft
Velocity..... 9.01 fps
Flow Area..... 8.78 sf
Critical Slope 0.0056 ft/ft
Critical Depth 2.78 ft
Percent Full.. 85.71 %
Froude Number. 0.84
Full Capacity. 76.30 cfs
QMAX @.94D.... 82.07 cfs
Enter the Roughness n
<F1> Help <F2> Print <F3> Calculator <PgDn> Create Table <ESC> Exit