CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

May 5, 2016

Ron Bohannan, PE
Tierra West, LLC
5571 Midway Park Pl NE
Albuquerque, NM 87109

RE: Skilled Nursing Facility, Renaissance Center (File: F16D017)
Drainage Report, Engineer's Stamp Date 4-25-2016
Grading Plan, Engineer's Stamp Date 5-5-2016

Dear Mr. Bohannan:

Based upon the information provided in your submittal received 4-26-16, the above referenced plan is approved for ESC Permit (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.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf recipient , Joel Hernandez

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 09/2015)

Project Title: Skilled Nursing Facility Building Permit #: _____ City Drainage #: F16/D017

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

Legal Description: TR 8-A Plat of Tracts 8-A and 8-B Renaissance Center

City Address: 1610 Renaissance Blvd NE Albuquerque NM 87107

Engineering Firm: Tierra West, LLC Contact: Joel Hernandez

Address: 5571 Midway Park Place NE Albuquerque NM 87109

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jdhernandez@tierrawestllc.com

Owner: AS Realty Investors Contact: Adam Schlesinger

Address: 3701 S. Robertson Blvd., Suite 201 Culver City, California 90232

Phone#: 310-202-6204 Fax#: 310-202-0831 E-mail: adam@asrealtyinvestors.com

Architect: Bixler Management Contact: Mark Bixler

Address: _____

Phone#: 870-653-3382 Fax#: _____ E-mail: mbixler@bixlermanagment.com

Other Contact: Surveyor- Precision Surveys, Inc. Contact: Larry Medrano

Address: P.O. Box 90636 Albuquerque NM 87199

Phone#: 505-858-5700 Fax#: _____ E-mail: larry@presurv.com

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

X GRADING PLAN

_____ DRAINAGE MASTER PLAN

X DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: _____ Yes _____ No

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY

_____ PRELIMINARY PLAT APPROVAL

_____ SITE PLAN FOR SUB'D APPROVAL

X SITE PLAN FOR BLDG. PERMIT APPROVAL

_____ FINAL PLAT APPROVAL

_____ SIA/ RELEASE OF FINANCIAL GUARANTEE

X FOUNDATION PERMIT APPROVAL

_____ GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

_____ PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

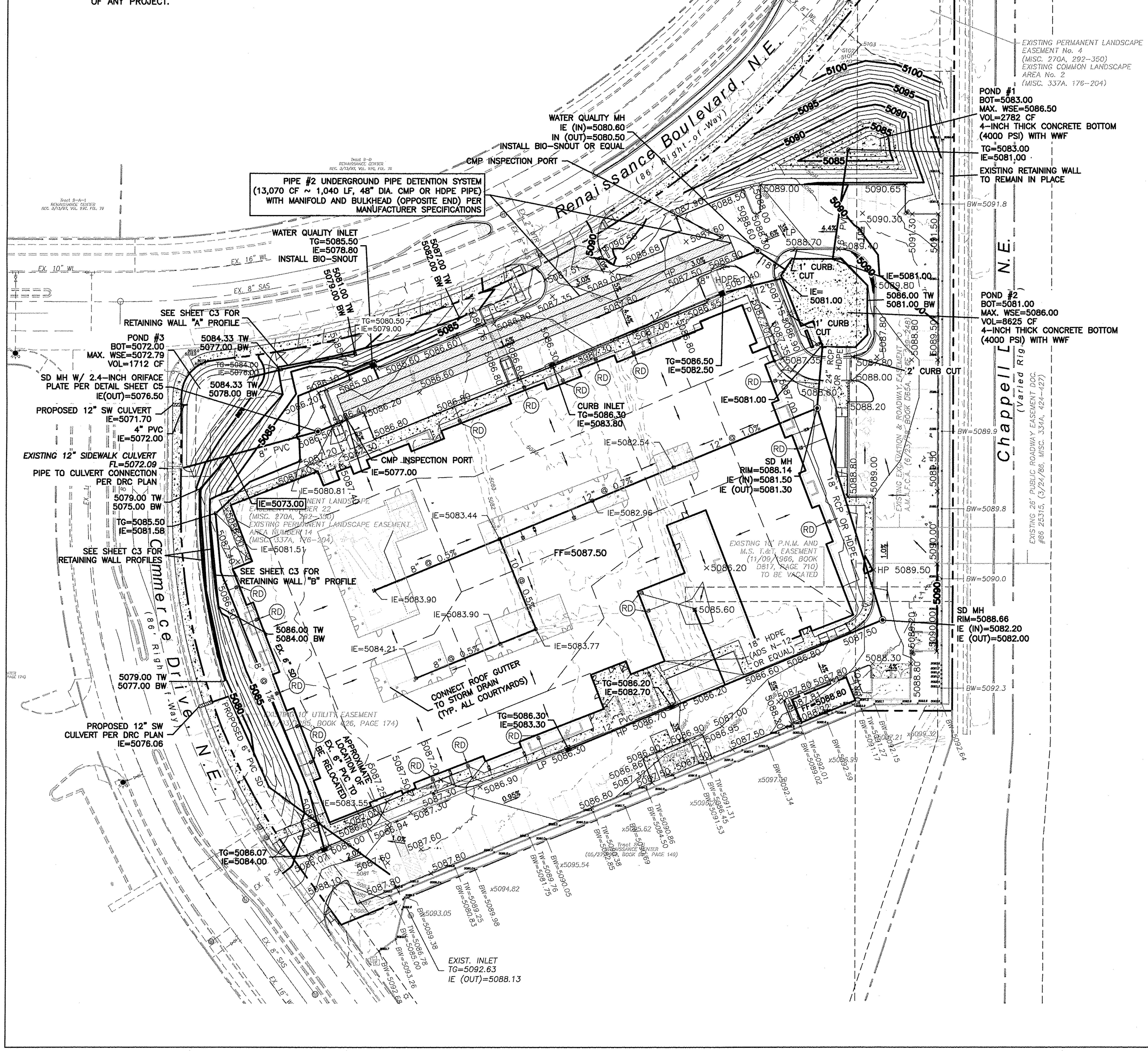
DATE SUBMITTED: 4/25/16 By: Joel Hernandez

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.

CAUTION:
ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

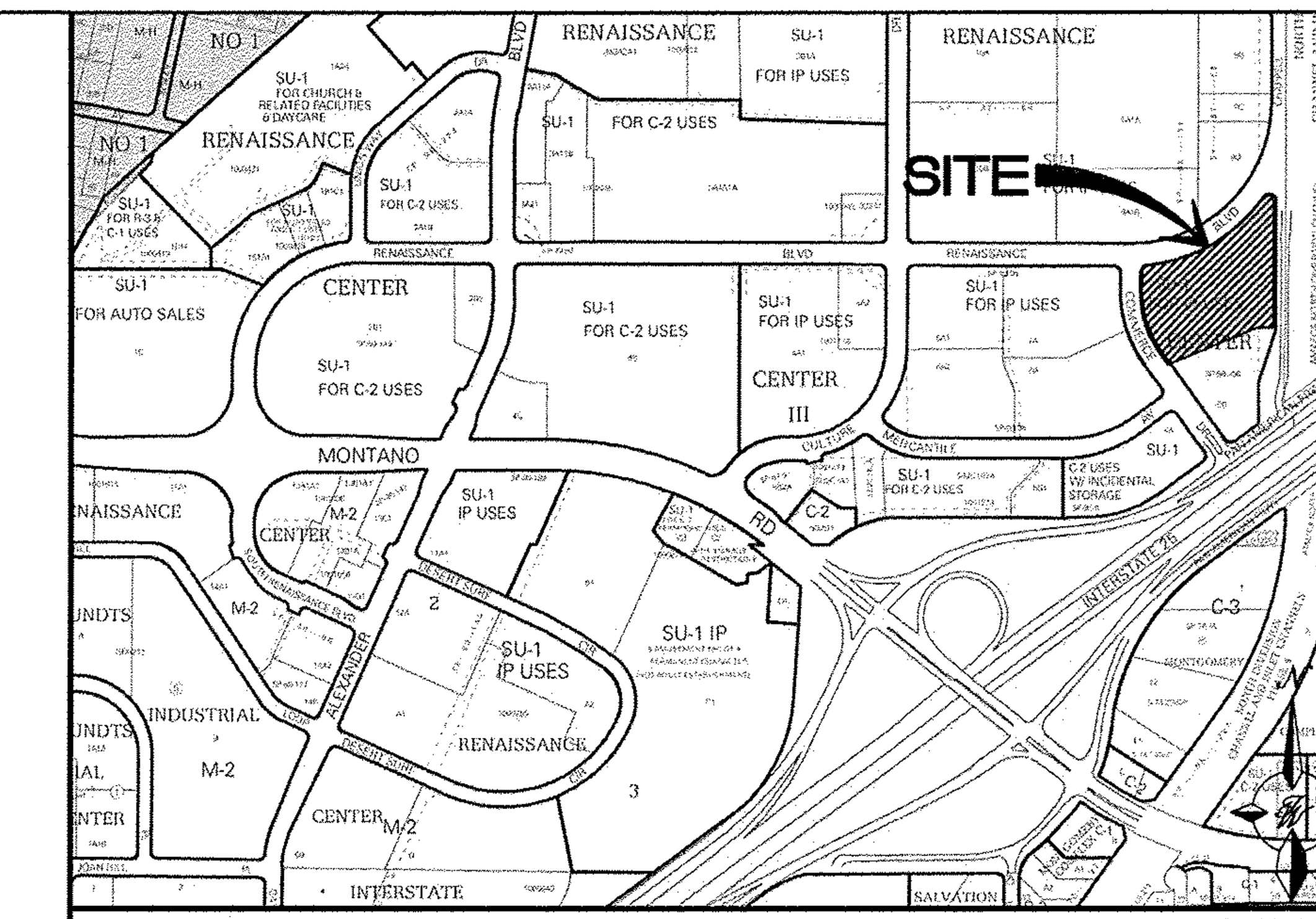


LEGEND

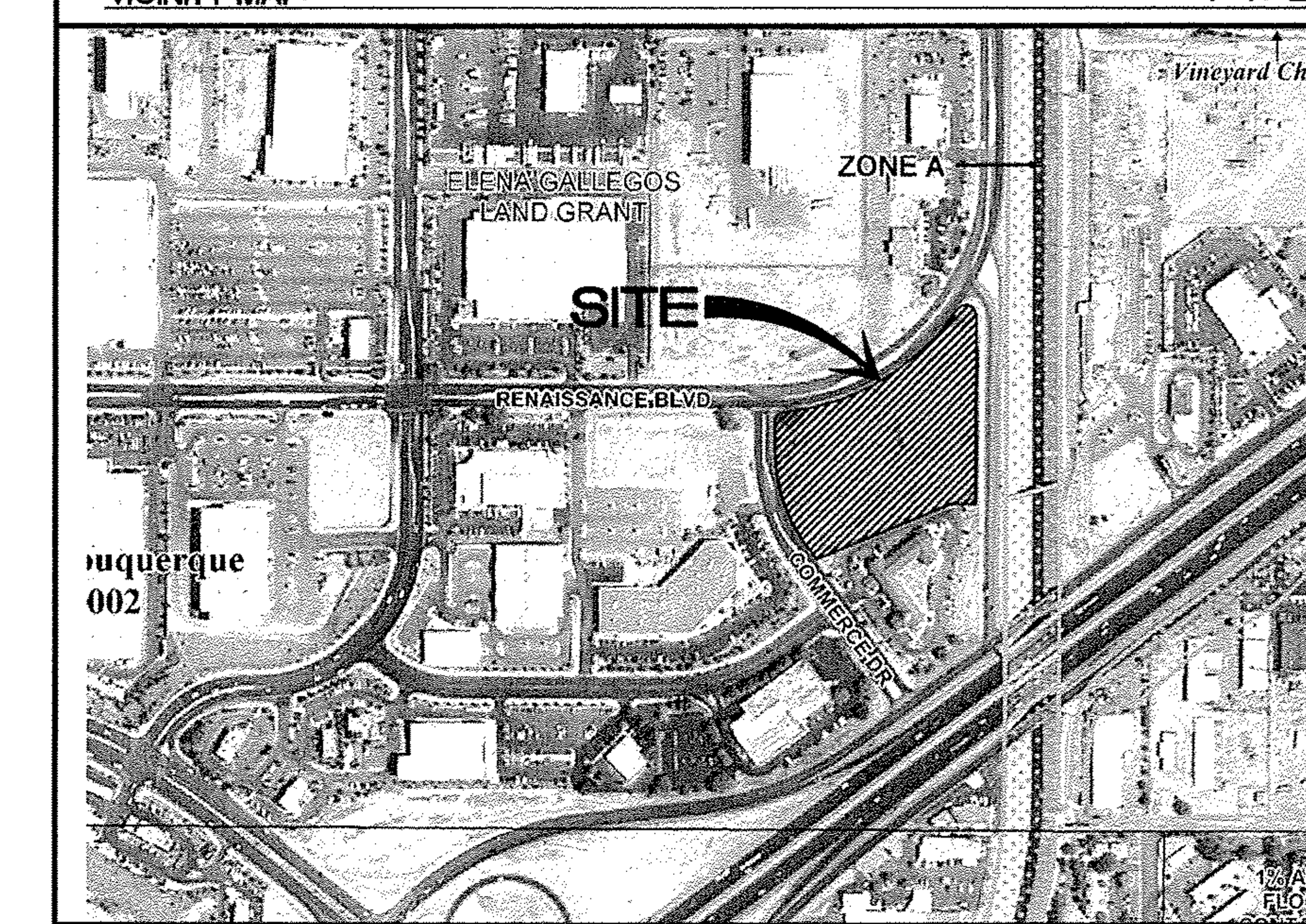
- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR
- x 5048.25 EXISTING SPOT ELEVATION

KEYED NOTE:

(RD) ROOF DRAIN CONNECTED TO 9"X9" AREA INLET, NDS OR EQUAL



VICINITY MAP: F-16-Z



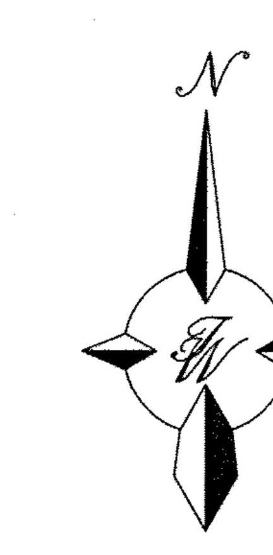
FIRM MAP: FM35001C0138H

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 HERON, 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 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 CONNECTIONS. 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.

APPROVAL	NAME	DATE
INSPECTOR		

ROUGH GRADING APPROVAL DATE



GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

ENGINEER'S SEAL	SKILLED NURSING FACILITY RENAISSANCE CENTER	DRAWN BY DY
JOEL D. HERNANDEZ NEW MEXICO 17893 PROFESSIONAL ENGINEER 5/5/16	GRADING AND DRAINAGE PLAN	DATE 5/05/16
		2014088-GRE
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # C2
JOEL D. HERNANDEZ P.E. #17893		JOB # 2014088

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
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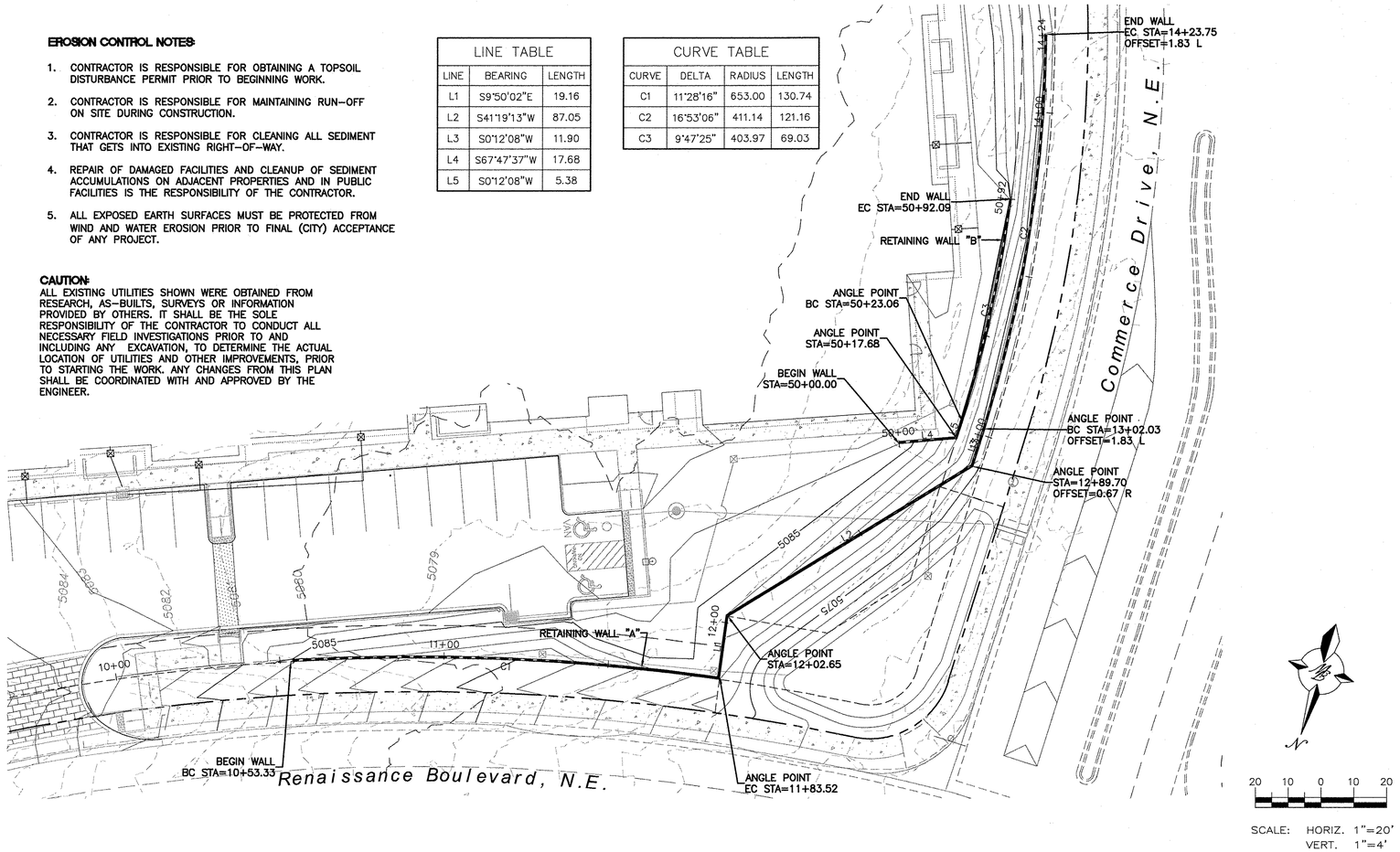
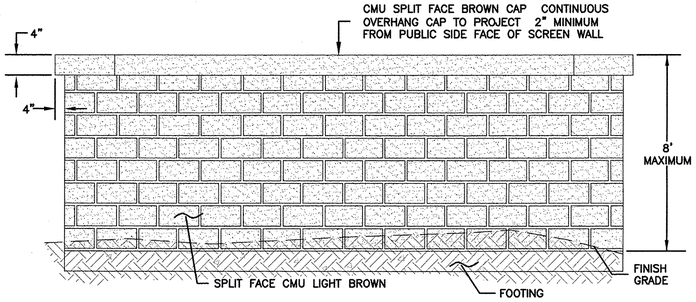
LINE TABLE		
LINE	BEARING	LENGTH
L1	S9°50'02"E	19.16
L2	S41°19'13"W	87.05
L3	S0°12'08"W	11.90
L4	S67°47'37"W	17.68
L5	S0°12'08"W	5.38

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	11°28'16"	653.00	130.74
C2	16°53'06"	411.14	121.16
C3	9°47'25"	403.97	69.03



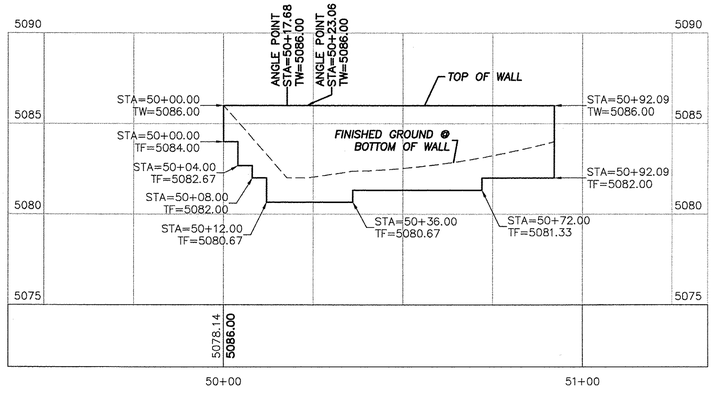


SCREENWALL/RETAINING WALL- ELEVATION FOR STREET FACING WALL

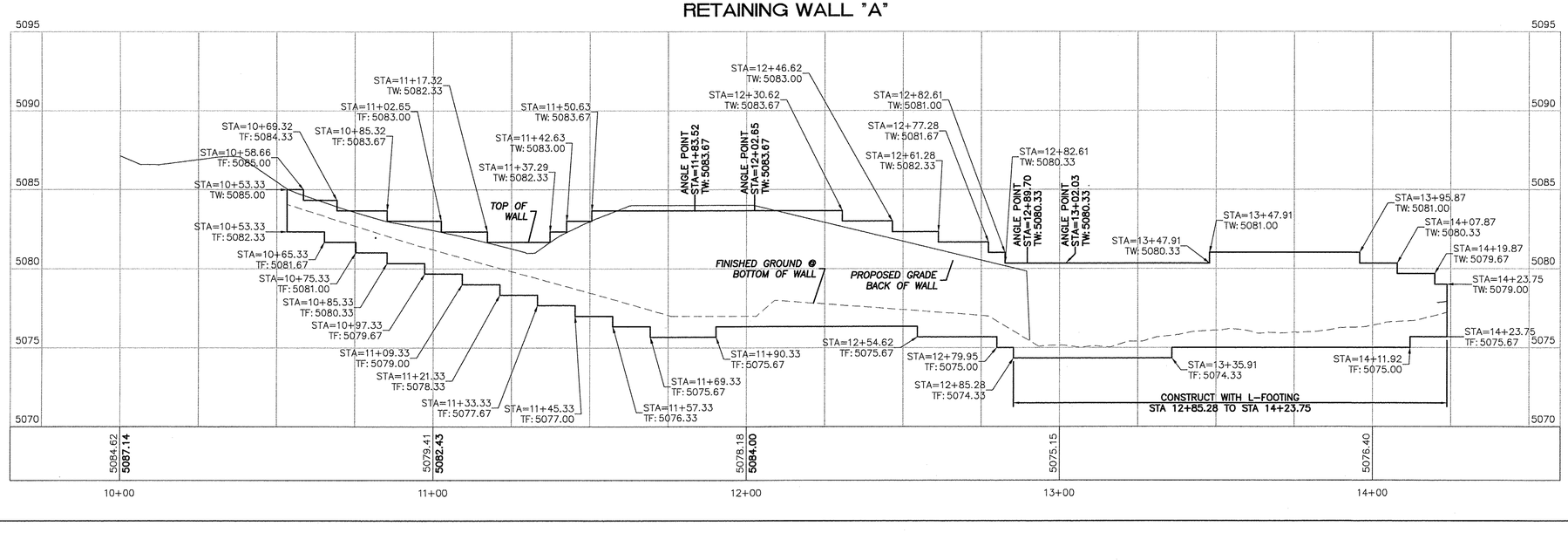
NTS

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

RETAINING WALL "B"



RETAINING WALL "A"



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR

ENGINEER'S SEAL

JOEL D. HERNANDEZ
NEW MEXICO
17893
PROFESSIONAL ENGINEER

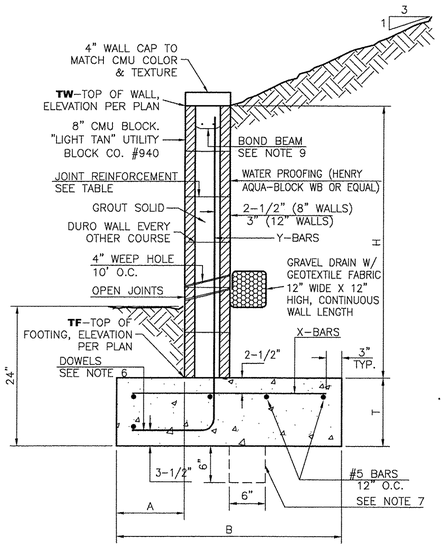
JOEL D. HERNANDEZ
P.E. #17893

SKILLED NURSING FACILITY
RENAISSANCE CENTER

RETAINING WALL PLAN AND PROFILE

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY: DY
DATE: 4/25/16
2014088-RWALLS
SHEET #: C3
JOB #: 2014088



8 INCH REINFORCED CONCRETE MASONRY WALL

H	A	B	T	Y–BARS	X–BARS
ft.–in.	in.	ft.–in.	in.		
2'–0"	8"	2'–0"	9"	#4 @32" O.C.	
2'–8"	8"	2'–0"	9"	#4 @32" O.C.	#4 @24" O.C.
3'–4"	8"	2'–4"	9"	#4 @32" O.C.	#4 @24" O.C.
4'–0"	10"	2'–8"	9"	#4 @32" O.C.	#4 @24" O.C.
4'–8"	12"	3'–4"	10"	#5 @32" O.C.	#4 @18" O.C.
5'–4"	14"	3'–10"	10"	#6 @16" O.C.	#4 @18" O.C.
6'–0"	16"	4'–8"	12"	#6 @ 8" O.C.	#4 @12" O.C.

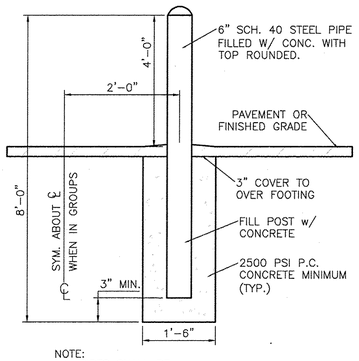
12 INCH REINFORCED CONCRETE MASONRY WALL

H	A	B	T	Y–BARS	X–BARS
ft.–in.	in.	ft.–in.	in.		
5'–4"	14"	3'–8"	10"	#6 @18" O.C.	#4 @24" O.C.
6'–0"	15"	4'–2"	12"	#4 @16" O.C.	#4 @18" O.C.
6'–8"	16"	4'–6"	12"	#6 @24" O.C.	#5 @18" O.C.
7'–4"	18"	4'–10"	12"	#6 @16" O.C.	#5 @18" O.C.
8'–0"	20"	5'–4"	12"	#7 @18" O.C.	#6 @12" O.C.
8'–8"	20"	5'–8"	12"	#7 @16" O.C.	#6 @12" O.C.

GENERAL NOTES:

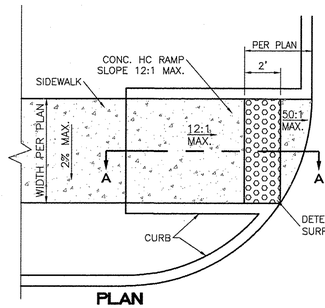
1. ALL CONCRETE IS TO BE 4000 PSI @ 28 DAYS.
2. MINIMUM COMPACTION UNDER FOOTINGS IS TO BE 95% PER ASTM. D 1557 FOR A DEPTH OF 12" MOISTURE CONTENT IS TO BE ± 2.0%.
3. BACK FILL AGAINST WALLS IS TO BE HAND–PLACED AND COMPACTED.
4. ALL BARS ARE TO BE GRADE 60, ASTM 615.
5. TRUSS TYPE DUR–O–WALL EVERY OTHER COURSE.
6. DOWELS SHALL BE AT LEAST EQUAL IN SIZE AND SPACING TO V–BARS, SHALL PROJECT A MINIMUM OF 30 BAR DIA. INTO THE FILLED BLOCK CORES, AND SHALL EXTEND TO THE TOE OF THE FOOTING.
7. PROVIDE KEY FOR 8" AND 12" WALLS WHERE H EXCEEDS 6'–0"
8. USE EITHER EXPANSION JOINTS ON 20' CENTERS OR PILASTERS EVERY 16'.
9. BOND BEAM, 1–#4 BARS FOR WALLS UNDER 3'–4", 2–#4 BARS FOR WALLS UNDER 5'–4", 2–#5 BARS FOR WALLS OVER 5'–4".

RETAINING WALL DETAIL
NTS

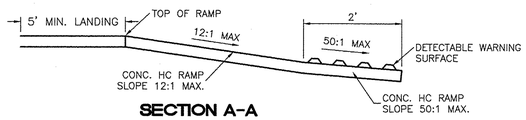


NOTE:
ALL PIPES SHALL BE PAINTED TRAFFIC YELLOW

BOLLARD DETAIL
NTS



PLAN

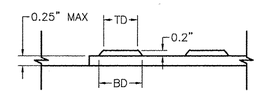


SECTION A-A

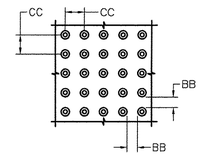
UNIDIRECTIONAL HC RAMP
NOT TO SCALE

NOTES:

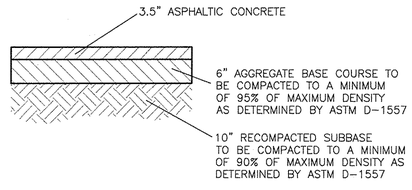
1. THE SURFACE OF RAMP AND SIDES SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE ROUGHER THAN THE SURROUNDING SIDEWALK.
2. CONSTRUCT PER A.D.A. STANDARDS.



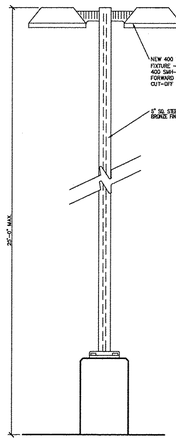
DOME SECTION
BD – BASE DIAMETER 0.9" MIN
TD – TOP DIAMETER 50% OF BD MIN TO 65% OF BD MAX



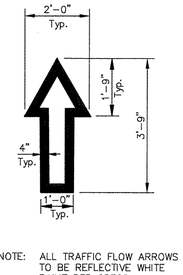
DOME SPACING
CC – CENTER TO CENTER SPACING 2.35"
BB – BASE TO BASE SPACING 1.48" MIN



TYPICAL HEAVY DUTY PAVING SECTION
NTS

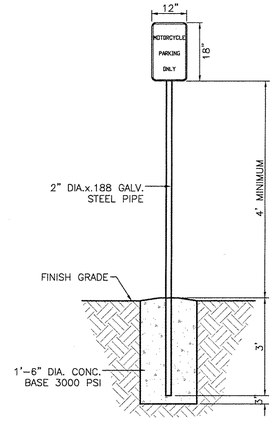


AREA LIGHT ELEVATION
SCALE : NTS

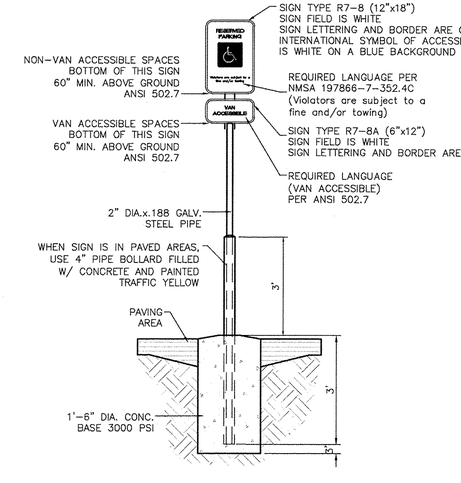


NOTE: ALL TRAFFIC FLOW ARROWS TO BE REFLECTIVE WHITE PAINT PER SPECS.

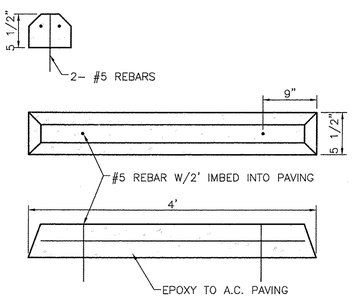
TRAFFIC FLOW ARROW
N.T.S.



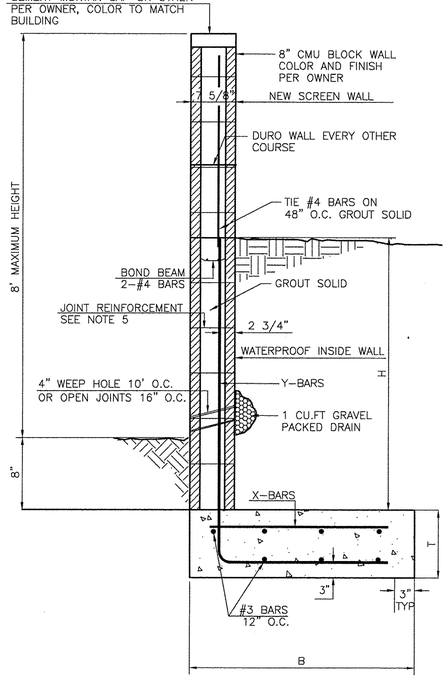
MOTORCYCLE PARKING SIGN
NTS



ACCESSIBLE PARKING SIGN
NTS



WHEEL BUMPER
NTS



"L" FOOTING RETAINING WALL DETAIL
NTS

GENERAL NOTES:

1. ALL CONCRETE IS TO BE 3000 PSI @ 28 DAYS.
2. MINIMUM COMPACTION UNDER FOOTINGS IS TO BE 95% PER ASTM. D 1557 FOR A DEPTH OF 12" MOISTURE CONTENT IS TO BE ± 2.0%.
3. BACK FILL AGAINST WALLS IS TO BE HAND–PLACED AND COMPACTED.
4. ALL BARS ARE TO BE GRADE 60, ASTM 615.
5. TRUSS TYPE DUR–O–WALL EVERY OTHER COURSE.
6. USE EITHER EXPANSION JOINTS ON 20' CENTERS OR PILASTERS EVERY 12'.
7. 30 BAR DIAMETER LAPS TYPICAL.
8. DUR–O–WAL HORIZONTAL JOINT REINFORCEMENT 16" O.C.
9. OPEN JOINTS 16" O.C. TYPICAL AT FIRST COURSE.
10. OWNER TO SELECT MASONRY COLOR AND/OR FINISH
11. SOLID MASONRY CAP COURSE TYPICAL.
12. WATER PROOF WALL.

8 INCH REINFORCED CONCRETE MASONRY WALL (FOR RETAINING PORTION ONLY)

H	B	T	Y–BARS	X–BARS
ft.–in.	ft.–in.	in.		
1'–4"	1'–9"	9"	#4 @ 24" O.C.	
2'–0"	2'–0"	9"	#4 @ 24" O.C.	
2'–8"	2'–6"	9"	#4 @ 24" O.C.	
3'–4"	2'–9"	12"	#4 @ 16" O.C.	#4 @ 16" O.C.
4'–0"	3'–3"	12"	#4 @ 16" O.C.	#4 @ 16" O.C.
4'–8"	4'–0"	12"	#4 @ 16" O.C.	#4 @ 16" O.C.
5'–4"	5'–0"	12"	#4 @ 8" O.C.	#4 @ 8" O.C.
6'–0"	5'–6"	12"	#4 @ 8" O.C.	#4 @ 8" O.C.

ENGINEER'S SEAL

RONALD R. BOHANNAN NEW MEXICO PROFESSIONAL ENGINEER

JOEL D. HERNANDEZ
P.E. #17893

SKILLED NURSING FACILITY
RENAISSANCE CENTER
DETAIL SHEET

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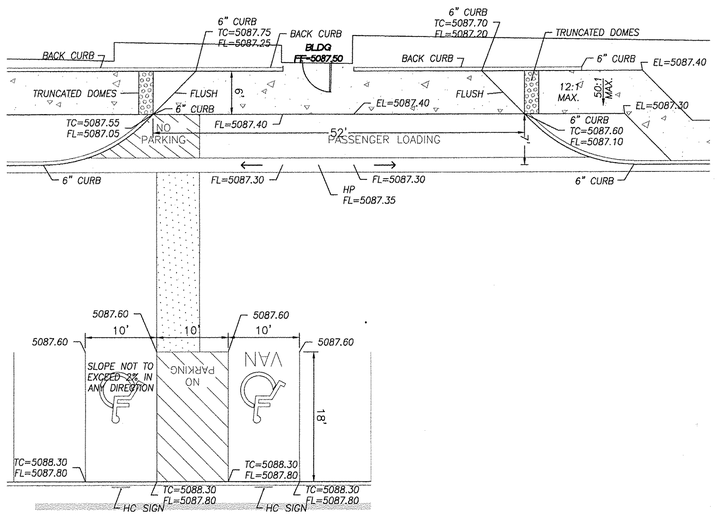
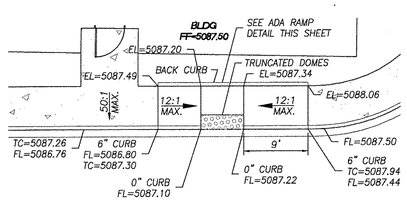
ALBUQUERQUE, NM 87109
(505) 858–3100
www.tierrawestllc.com

DRAWN BY: DY
DATE: 4/15/16
2014088–DTE
SHEET #: C5
JOB #: 2014088

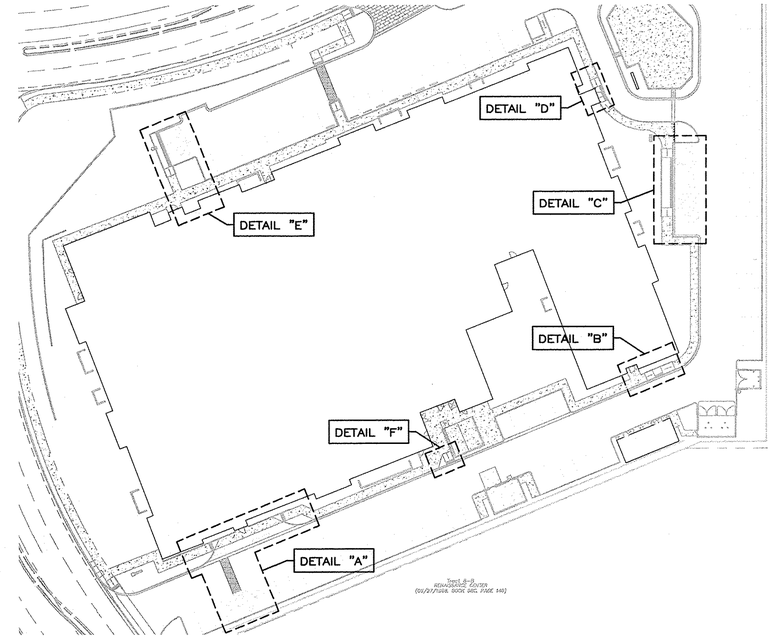


DETAIL "A"
SCALE: 1"=10'

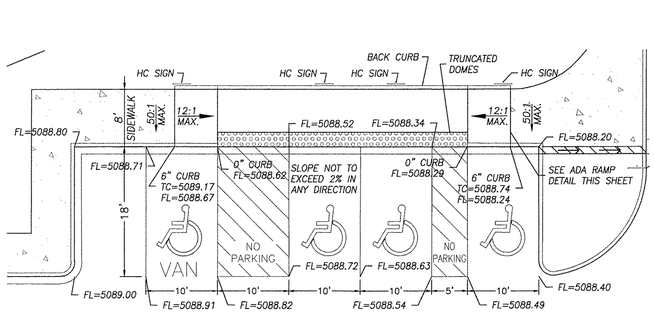
NOTES:
1) *International Symbol of Accessibility shall be painted on the pavement at rear of space, white symbol on blue background.*
2) *Parking space lines and diagonal striping to be painted blue.*
3) *Access aisle shall have the words "NO PARKING" in capital letters, each of which shall be at least one foot high and at least two inches wide, placed at the rear of the parking space so as to be close to where an adjacent vehicle's rear tires would be placed.*
4) *See sheet C5 for HC Parking Sign Detail.*



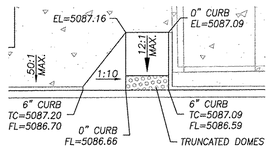
DETAIL "B"
SCALE: 1"=10'



KEY MAP FOR ADA RAMPS
SCALE: 1"=50'



DETAIL "C"
SCALE: 1"=10'



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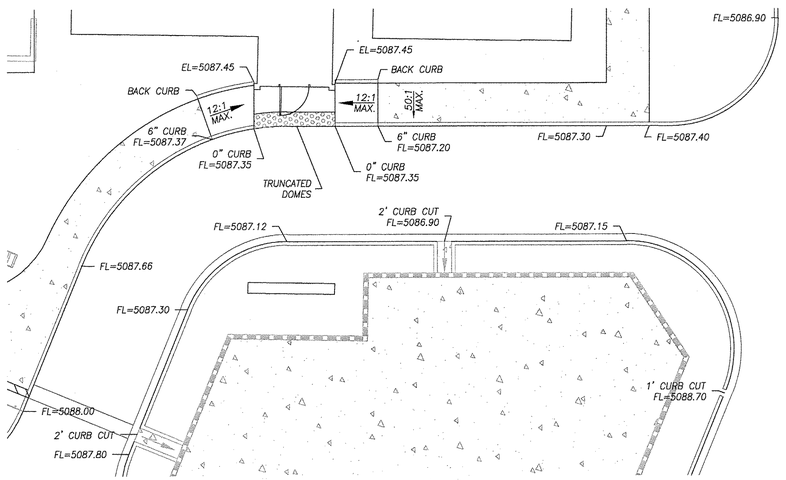
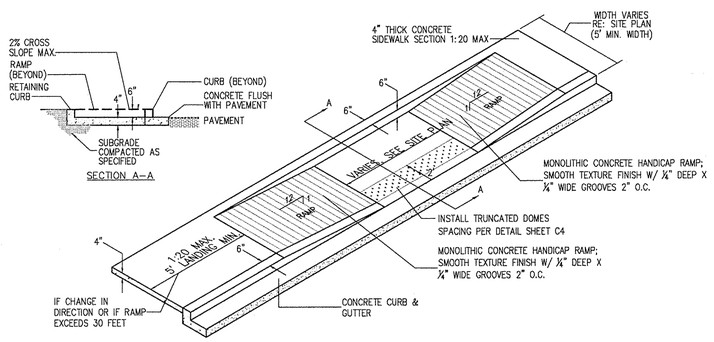
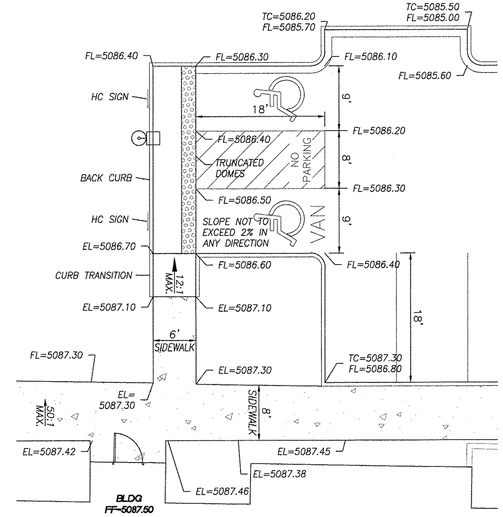


DETAIL "D"
SCALE: 1"=10'



ADA RAMP DETAIL - SEE DETAIL "C" THIS SHEET
SCALE: 1"=10'



DETAIL "E"
SCALE: 1"=10'

ENGINEER'S SEAL RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER JOEL D. HERNANDEZ P.E. #17893	SKILLED NURSING FACILITY RENAISSANCE CENTER DETAIL SHEET	DRAWN BY DY DATE 4/08/16 2014088-DTE SHEET # C6 JOB # 2014088

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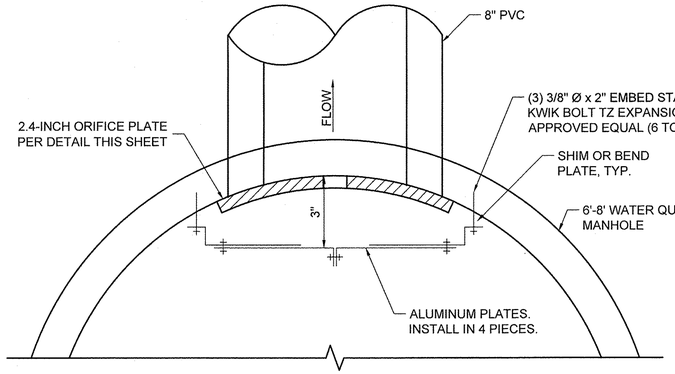
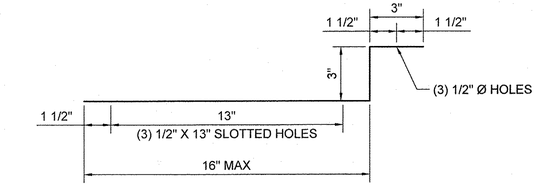
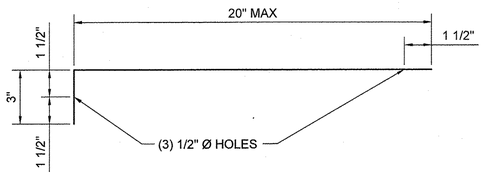
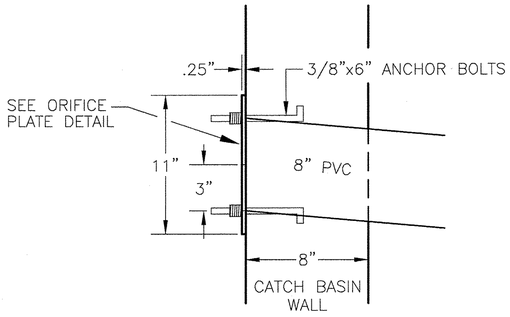


ALUMINUM BAFFLE PLAN
NO SCALE

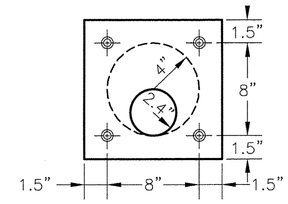




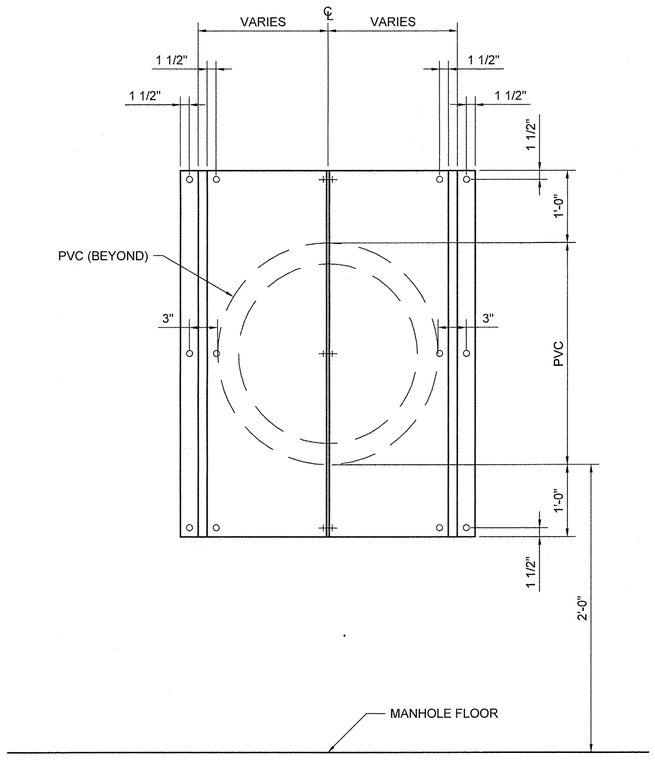
ALUMINUM PLATE BEND DIAGRAM
NO SCALE



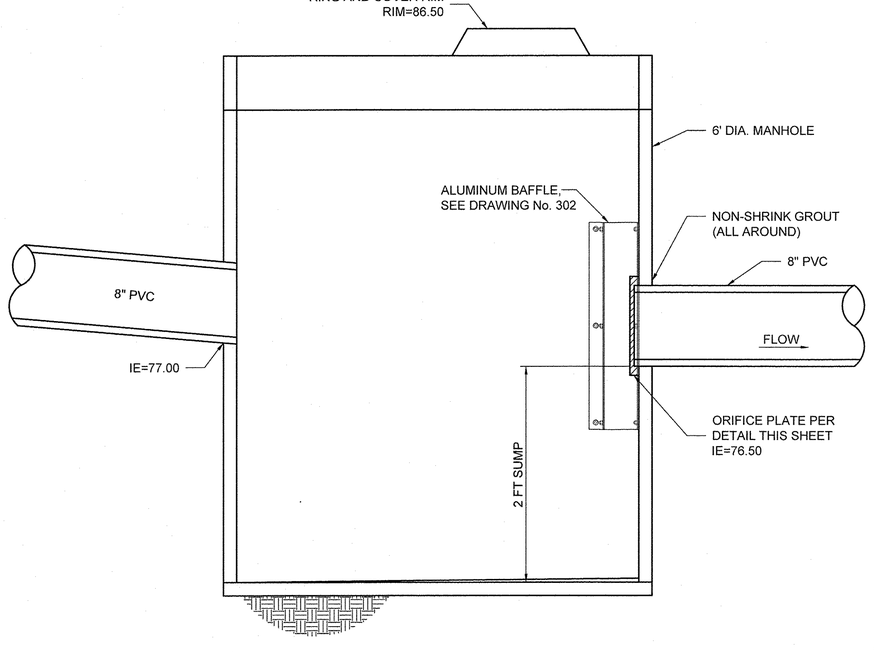
DETAIL A



2.4-INCH ORIFICE PLATE DETAIL
NTS



ALUMINUM BAFFLE ELEVATION
NO SCALE



SECTION B-B
NO SCALE

ENGINEER'S SEAL

JOEL D. HERNANDEZ
NEW MEXICO
17893
5/5/16
PROFESSIONAL ENGINEER

JOEL D. HERNANDEZ
P.E. #17893

SKILLED NURSING FACILITY
RENAISSANCE CENTER

DETAIL SHEET

TIERRA WEST, LLC
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ALBUQUERQUE, NM 87109
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www.tierrawestllc.com

DRAWN BY
DY

DATE
5/05/16

2014088-DTE

SHEET #
C9

JOB #
2014088

DRAINAGE REPORT
for

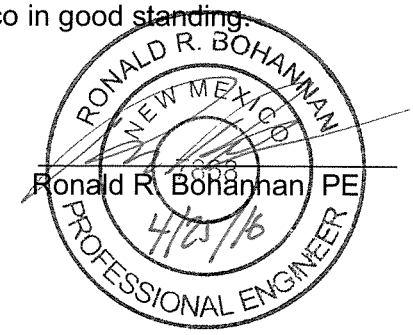
Skilled Nursing Facility
1610 Renaissance Boulevard

Prepared by:

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

April, 2016

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.



Ronald R. Bohannan, PE

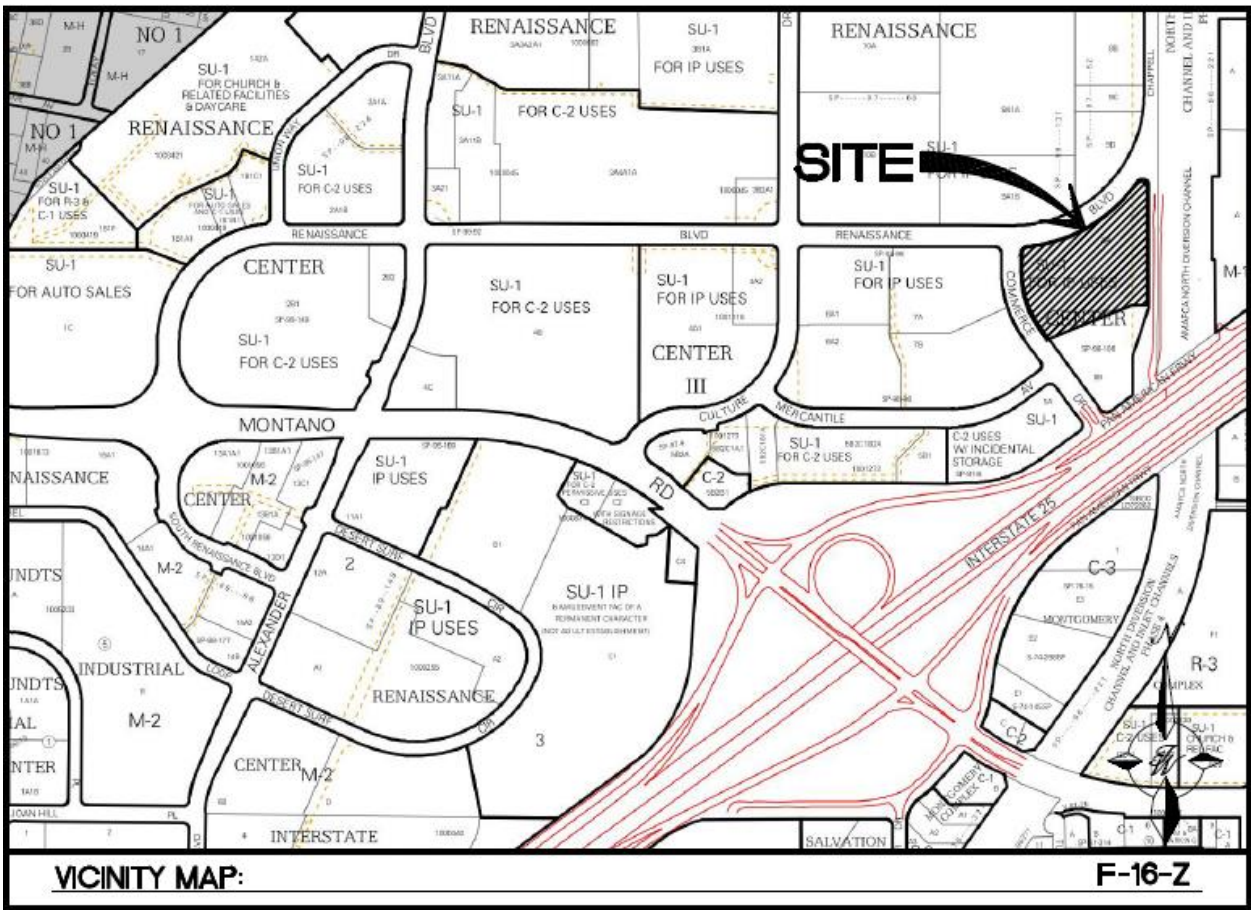
DRAINAGE MANAGEMENT PLAN

Introduction

The purpose of this drainage report is to present a drainage solution for the proposed development consisting of a single-story building for a skilled nursing facility and associated parking facility, and to document the waiver from the on-site retention of the first-flush flows. This report is a request for approval of the Grading and Drainage plan for Site Development Plan for Building Permit approval.

Project Location

The project site address is 1610 Renaissance Boulevard, NE which corresponds to Tract 8-A of the renaissance Center located on the southeast corner of Commerce Drive and Renaissance Boulevard, NE. The site is bounded by Renaissance Boulevard on the north, Commerce Drive on the west, Chappell Road on the east, and Tract 8-B to the south which is an existing hotel.

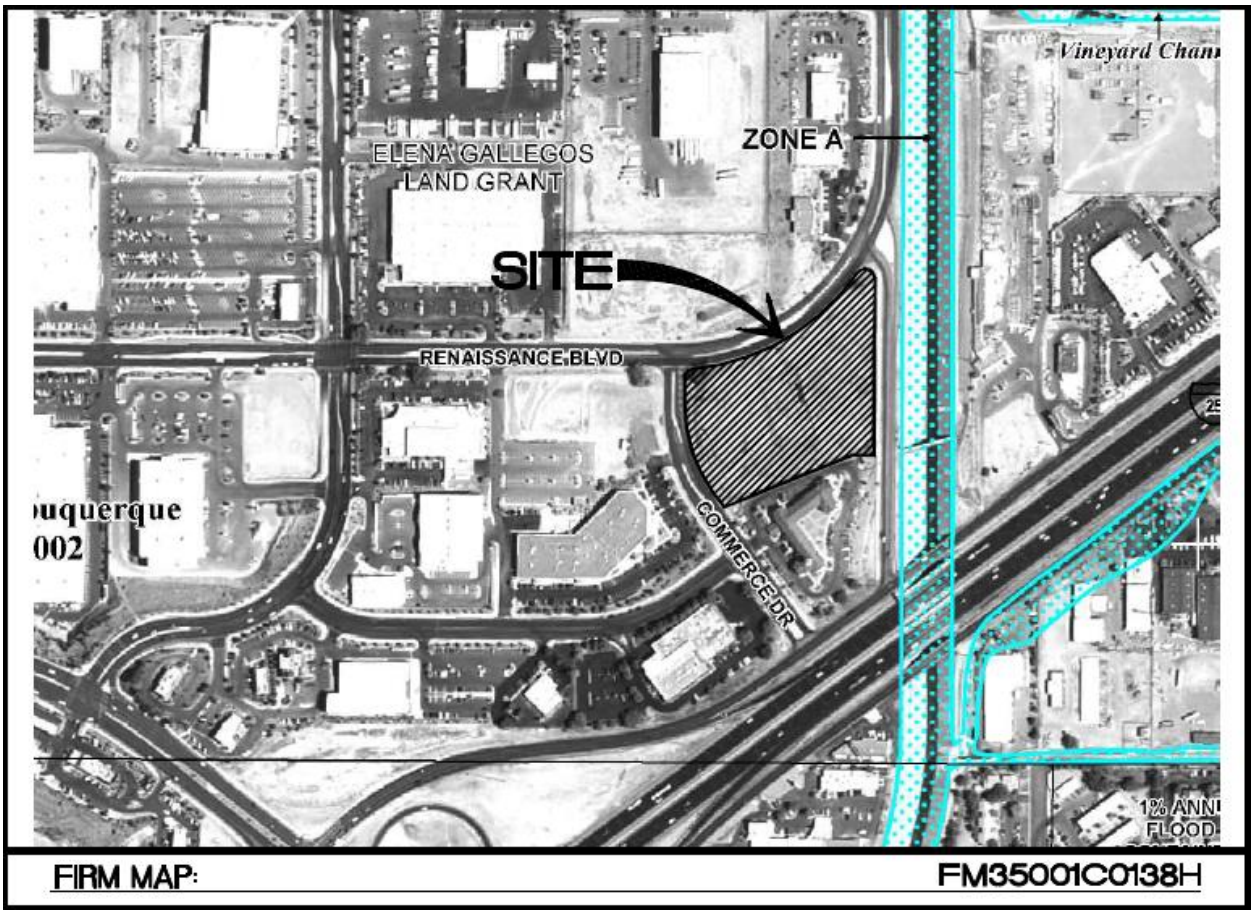


Existing Drainage Conditions

The site falls within the approved Renaissance Drainage Master Plan, and is currently undeveloped, although previously rough graded with two pads. The Renaissance Drainage Master Plan allows a controlled release runoff of 0.10 cfs per acre from each tract. The existing conditions were analyzed using the criteria set by the City of Albuquerque DPM.

Existing conditions, analyzed as a single basin with a runoff rate of 15.3 cfs., generally sheet flows from the southeast to the northwest portion of the site discharging onto Commerce Drive through a sidewalk culvert near the Renaissance Boulevard intersection. No offsite runoff enters the site.

The site is located outside any mapped 100 year floodplain, as indicated on FEMA FIRM Map 35001C0138H.



Proposed Drainage Management/Post-Developed Condition

The grading and drainage design is configured to accommodate the proposed building and associated improvements, convey flows from the “developed” condition, while attenuating the outflow to not exceed the maximum rate of 0.5 cfs allowed by the Renaissance Drainage Master Plan for this site.

Drainage from the majority of the developed site will be collected through a network of storm drain pipes and routed through above-ground detention ponds and an underground detention storage system, such as a CMP pipe and manifold system, before releasing flows onto Commerce Drive at the existing sidewalk culvert location where the site currently flows. An area at the northeast portion of the site (Basin C1) will flow into a pond (Pond #1) which will be drained into Pond #2 through a 6-inch diameter pipe. The remaining sub-basins, with the exception of "Basin D2", are routed to Pond #2 which is interconnected with the 15,080 cubic-foot underground storage system which provides 0.6507 acre-feet of total storage available. Flow from the Pond #2 combined system is slowly released through a 2.4-inch orifice plate to the sidewalk culvert outfall. Flow from Pond #3, which accommodates flow from "Basin D2", is drained through a 4-inch pipe with a 1.4-inch orifice plate and connected to the outflow pipe from Pond #2 near the sidewalk culvert outfall.

A hydrologic analysis was performed using AHYMO to determine the flows generated by the 100-year storm in the developed condition, as well as to determine the maximum system outflow rate after routing through the onsite detention system. A drainage basin map, schematic of the system, pond volume storage tabulations, stage-discharge calculations, and the AHYMO input and output data are included in Appendix A.

The storm drain system is sized to accommodate the developed flows from the site, including the roof drains and patio areas internal to the building. Water quality manholes to minimize sediment and debris from entering the underground detention system will be constructed using a Bio Snout, EnviroHood, or equal. Hydraulic calculations for inlets, storm drain pipes, and concrete flume capacities are included in Appendix B along with a storm drain schematic exhibit.

Water Quality Management

Given the potential for collapsible soils onsite, a waiver for onsite retention of the first-flush has been requested with this project. BMP's consisting of water quality manholes, as described above, will be implemented on-site to reduce the pollutants entering the underground detention system and the site, however, on-site retention of the first-flush volume is not feasible due to the geotechnical conditions and recommendations from the Geotechnical Investigation Report. It should also be noted that drainage from this area is conveyed to a regional pond which provides a disconnect from the Rio Grande.

Conclusion

This Drainage Management Plan provides for grading and drainage elements which are capable of safely conveying the 100-year, 6-hour storm and which meet the City requirements, as well as meeting the requirements of the Renaissance Center Master Drainage Plan. With this submittal we request Drainage Report and Grading Plan approvals for the Site Plan for Building Permit Application.

APPENDIX A

HYDROLOGY

Tract S-D
RENAISSANCE CENTER
REC. 3/13/97, VOL. 97C, FOL. 76

Renaissance Boulevard, N.E.
(86' Right-of-Way)

Commerce Drive, N.E.
(86' Right-of-Way)

Chappell Drive, N.E.
(Varied Right-of-Way)

Basin D2
0.43 ac
1.37 cfs

POND #3

SD MH

8" PVC

Basin C6
0.32 ac
1.35 cfs

18" HDPE

Basin C1
0.58 ac
1.70 cfs

POND #1

SD MH

Basin C4
0.45 ac
1.99 cfs

Basin C3
0.19 ac
0.62 cfs

POND #2

Basin C5
0.19 ac
0.81 cfs

Basin B1
0.25 ac
1.19 cfs

Basin B4
0.24 ac
1.14 cfs

Basin B5
0.10 ac
0.48 cfs

8" @ 0.5%

12" @ 0.7%

3.94

4.42

12" @ 1.0%

8.98

18" RCP OR HDPE

Basin C2
0.36 ac
1.54 cfs

8" @ 1%

10" @ 0.5%

1.61

Basin B3
0.20 ac
0.93 cfs

FF=5087.50

Basin A3
0.25 ac
0.90 cfs

8" @ 0.5%

Basin B2
0.14 ac
0.68 cfs

Basin A2
0.74 ac
2.99 cfs

18" RCP OR HDPE

4.56

12" PVC

18" HDPE (ADS N-12 OR EQUAL)

SD MH

4.56

Basin D1
0.12 ac
0.47 cfs

Basin A1
0.36 ac
1.57 cfs

5086.86
5087.32
5087.50
5086.95
5087.81
5088.22

x5093.05
x5094.82
x5095.62
x5096.26
x5097.19

5080
5085
5090
5095
5100

NTS

LEGEND

DRAINAGE BASIN

FLOW DIRECTION

Basin ID
Basin Area
Q_{100} (cfs)

Analysis Point
Q100

POST-DEVELOPMENT DRAINAGE BASINS

TIERRA WEST, LLC

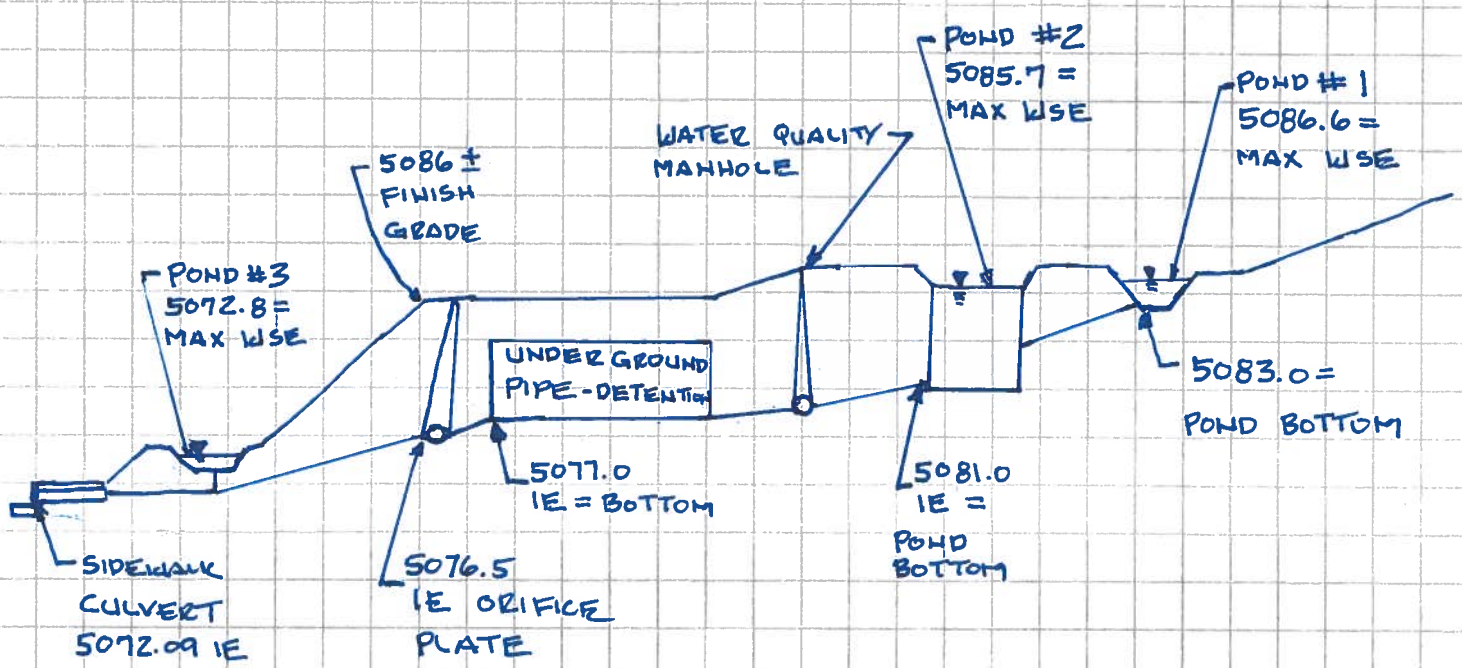
Project SKILLED NURSING Date

Project No. 2014088

Meeting Purpose Sheet No of

Attendees

DETENTION POND SYSTEM SCHEMATIC



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TIERRA WEST, LLC

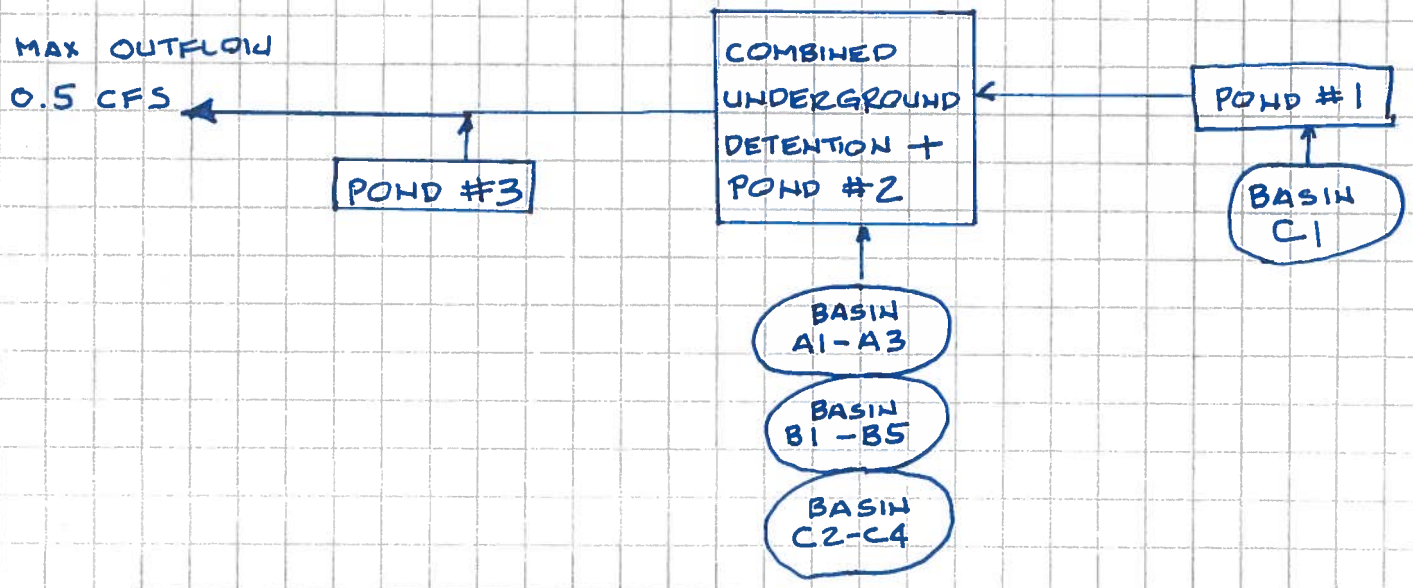
Project SKILLED NURSING Date

Project No. 2014088

Meeting Purpose Sheet No of

Attendees

AHYMO ROUTING SCHEMATIC



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Tract 8A, RENAISSANCE CENTER

Existing and Proposed Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	V(100) (inches)	V(100) (CF)
EXISTING CONDITIONS										
A	212000	4.87	0.0%	0.0%	99.0%	1.0%	3.16	*15.36*	*1.14*	*20138*
TOTAL		**4.87**						***15.36***	***1.14***	***20138***

Per the Renaissance Center Master Drainage Plan,
the Maximum Release from the Site is 0.10 cfs/acre.

This table is based on the DPM Section 22.2, Zone: 2

BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	V(100) (inches)	V(100) (CF)	1ST FLUSH	Area (SQ. MI)
PROPOSED CONDITIONS												
A1	15,835	0.36	0.0%	16.0%	0.0%	84.0%	4.31	*1.57*	*1.91*	*2515*	*377*	0.00057
A2	32,146	0.74	0.0%	27.0%	0.0%	73.0%	4.05	*2.99*	*1.76*	*4710*	*665*	0.00115
A3	10,825	0.25	0.0%	45.0%	0.0%	55.0%	3.61	*0.90*	*1.52*	*1368*	*169*	0.00039
B1	11,054	0.25	0.0%	0.0%	0.0%	100.0%	4.70	*1.19*	*2.12*	*1953*	*313*	0.00040
B2	6,271	0.14	0.0%	0.0%	0.0%	100.0%	4.70	*0.68*	*2.12*	*1108*	*178*	0.00022
B3	8,635	0.20	0.0%	0.0%	0.0%	100.0%	4.70	*0.93*	*2.12*	*1526*	*245*	0.00031
B4	10,545	0.24	0.0%	0.0%	0.0%	100.0%	4.70	*1.14*	*2.12*	*1863*	*299*	0.00038
B5	4,438	0.10	0.0%	0.0%	0.0%	100.0%	4.70	*0.48*	*2.12*	*784*	*126*	0.00016
C1	25,404	0.58	15.0%	54.0%	0.0%	31.0%	2.92	*1.70*	*1.16*	*2451*	*223*	0.00091
C2	15,594	0.36	0.0%	17.0%	0.0%	83.0%	4.29	*1.54*	*1.89*	*2459*	*367*	0.00056
C3	8,250	0.19	0.0%	20.0%	0.0%	80.0%	4.22	*0.80*	*1.85*	*1273*	*187*	0.00030
C4	19,802	0.45	0.0%	13.0%	0.0%	87.0%	4.39	*1.99*	*1.95*	*3211*	*488*	0.00071
C5	8,223	0.19	0.0%	17.0%	0.0%	83.0%	4.29	*0.81*	*1.89*	*1297*	*193*	0.00029
C6	14,016	0.32	0.0%	21.0%	0.0%	79.0%	4.19	*1.35*	*1.84*	*2147*	*314*	0.00050
D1	5,118	0.12	0.0%	30.0%	0.0%	70.0%	3.97	*0.47*	*1.72*	*733*	*102*	0.00018
D2	18,666	0.43	0.0%	0.0%	97.0%	3.0%	3.19	*1.37*	*1.16*	*1804*	*16*	0.00067
TOTAL		**4.93**						***19.89***	***1.91***	***31201***	***4260***	

DETENTION VOLUME CALCS

POND NO.1 (BASIN C1 ONLY) VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	CUMULATIVE VOLUME (ac-ft)
5083	216	0	0	0.0000
5084	500	358	358	0.0082
5085	902	701	1059	0.0243
5086	1423	1162.5	2222	0.0510
5087	2088	1755.5	3977	0.0913
5088	2936	2512	6489	0.1490

POND 2 + UNDERGROUND STORAGE VOLUME CALCULATION

PIPE DIA= 48 PIPE L= 1,040

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	CUMULATIVE VOLUME (ac-ft)
5077.0	0		0	
5077.5	0.91		946.4	0.0217
5078.0	2.46		2558.4	0.0587
5078.5	4.3		4472	0.1027
5079.0	6.28		6531.2	0.1499
5079.5	8.26		8590.4	0.1972
5080.0	10.11		10514.4	0.2414
5080.5	11.66		12126.4	0.2784
5081.0	12.57		13069	0.3000
5082.0	2653	2653	15722	0.3609
5083.0	2653	2653	18375	0.4218
5084.0	2653	2653	21028	0.4827
5085.0	2653	2653	23681	0.5436
5086.0	2653	2653	26334	0.6045

POND 3 (BASIN D2 ONLY) VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	CUMULATIVE VOLUME (ac-ft)
5072	1426	0	0	0.0000
5073	1998	1712	1712	0.0393

STAGE-DISCHARGE CALCULATIONS

DETENTION POND #1

STAGE, VOLUME, DISCHARGE

Orifice Elevation: 5083.0

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5083	0	0	0.0000
5084	1.00	0.0082	0.1554
5085	2.00	0.0243	0.2260
5086	3.00	0.0510	0.2793
5087	4.00	0.0913	0.3240
5088	5.00	0.1490	0.3632

Orifice Equation

Q = CA SQRT(2gH)

C = 0.6
Diameter (i 2.5
Area (ft^2)= 0.034
g = 32.2
H (Ft) = Depth of water above center of orifice
Q (CFS)= Flow

STAGE-DISCHARGE CALCULATIONS

DETENTION POND NO. 2 COMBINED
WITH UNDERGROUND STORAGE

STAGE, VOLUME, DISCHARGE

Orifice Elevation: 5076.5

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5077.0	0.50	0	0.0957
5077.5	1.00	0.0217	0.1435
5078.0	1.50	0.0587	0.1790
5078.5	2.00	0.1027	0.2085
5079.0	2.50	0.1499	0.2343
5079.5	3.00	0.1972	0.2576
5080.0	3.50	0.2414	0.2789
5080.5	4.00	0.2784	0.2987
5081.0	4.50	0.3000	0.3173
5082.0	5.50	0.3609	0.3515
5083.0	6.50	0.4218	0.3827
5084.0	7.50	0.4827	0.4115
5085.0	8.50	0.5436	0.4384
5086.0	9.50	0.6045	0.4638

Orifice Equation
Q = CA SQRT(2gH)

C = 0.6
Diameter (i 2.4
Area (ft^2)= 0.031
g = 32.2
H (Ft) = Depth of water above center of orifice
Q (CFS)= Flow

STAGE-DISCHARGE CALCULATIONS

DETENTION POND #3

STAGE, VOLUME, DISCHARGE

Orifice Elevation: 5072.0

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5072	0	0	0.0000
5073	1.00	0.0393	0.0499

Orifice Equation

Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	1.4
Area (ft^2)=	0.011
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*****************************************************************
*               Skilled Nursing Renaissance, ABQ,NM             *
*****************************************************************
* 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *
*****************************************************************
*
START               TIME=0.0
*
*
RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                    RAIN DAY=2.75 IN DT=0.05 HR
*DEVELOPED CONDITIONS
*
*BASIN A1
*
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.00057 SQ MI
                    PER A=0.00 PER B=16.0 PER C=0.00 PER D=84.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*
*BASIN A2
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00115 SQ MI
                    PER A=0.00 PER B=27.0 PER C=00.0 PER D=73.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
*
*
*BASIN A3
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00039 SQ MI
                    PER A=0.00 PER B=45.0 PER C=00.0 PER D=55.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=3 CODE=1
*
*
*BASIN B1-B5
*
COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.00147 SQ MI
                    PER A=0.00 PER B=0.00 PER C=00.0 PER D=100.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=4 CODE=1
*
*
*BASIN C2
*
```

```
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.00056 SQ MI
                    PER A=0.00 PER B=17.0 PER C=0.0 PER D=83.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=5 CODE=1
*
*
*BASIN C3
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.00030 SQ MI
                    PER A=0.00 PER B=20.0 PER C=0.0 PER D=80.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=6 CODE=1
*
*
*BASIN C4
*
COMPUTE NM HYD      ID=7 HYD NO=100.7 AREA=0.00071 SQ MI
                    PER A=0.00 PER B=13.0 PER C=0.0 PER D=87.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=7 CODE=1
*
*
*BASIN C1
*
COMPUTE NM HYD      ID=8 HYD NO=100.8 AREA=0.00091 SQ MI
                    PER A=15.0 PER B=54.0 PER C=0.0 PER D=31.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=8 CODE=1
**
*ROUTE BASIN C1 THROUGH DETENTION POND NO.1
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=8 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                    0.1000         0.0                 83.00
                    0.1554         0.0082              84.00
                    0.2260         0.0243              85.00
                    0.2793         0.0510              86.00
                    0.3240         0.0913              87.00
                    0.3632         0.1490              88.00
*
PRINT HYD           ID=55  CODE=1
*
*
*BASIN C6
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.00050 SQ MI
                    PER A=0.00 PER B=21.0 PER C=0.0 PER D=79.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=9 CODE=1
*
```

```
*
*BASIN C5
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.00029 SQ MI
                    PER A=0.00 PER B=17.0 PER C=0.0 PER D=83.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=10 CODE=1
*
*
*BASIN D1
*
COMPUTE NM HYD      ID=11 HYD NO=100.11 AREA=0.00018 SQ MI
                    PER A=0.00 PER B=30.0 PER C=0.0 PER D=70.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=11 CODE=1
*
*
*COMBINE POND1 DISCHARGE WITH BASINS ROUTED TO POND NO.2
*
ADD HYD             ID=50 HYD NO=100.21 ID=1 ID=2
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=3
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=4
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=5
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=6
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=7
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=9
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=10
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=11
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=55
*
PRINT HYD           ID=50 CODE=1
*
*ROUTE POND1 DISCHARGE & BASINS A1-3,B1-5,C2-6,D1 THRU COMBINED UG/POND 2 DETENTION
SYSTEM
ROUTE RESERVOIR     ID=56 HYD NO=200.3 INFLOW ID=50 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                    0.0957         0.0000              77.00
                    0.1435         0.0217              77.50
                    0.1790         0.0587              78.00
                    0.2085         0.1027              78.50
                    0.2343         0.1499              79.00
                    0.2576         0.1972              79.50
                    0.2789         0.2414              80.00
                    0.2987         0.2784              80.50
                    0.3173         0.3000              81.00
                    0.3515         0.3609              82.00
                    0.3827         0.4218              83.00
                    0.4115         0.4827              84.00
```

```
                        Skilled Nursing COMBINED final
                    0.4384          0.5436              85.00
                    0.4638          0.6045              86.00
*
PRINT HYD           ID=56  CODE=1
*
*BASIN D2
*
COMPUTE NM HYD      ID=12 HYD NO=100.12 AREA=0.00067 SQ MI
                    PER A=0.00 PER B=97.0 PER C=0.0 PER D=3.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=12 CODE=1
*
*
*ROUTE BASIN D2 THROUGH POND NO 3
ROUTE RESERVOIR     ID=57 HYD NO=200.3 INFLOW ID=12 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                    0.0100          0.0000              72.00
                    0.0500          0.0393              73.00
*
PRINT HYD           ID=57  CODE=1
*
ADD HYD             ID=58 HYD NO=100.22 ID=56 ID=57
*
PRINT HYD           ID=58 CODE=1
*
*
FINISH
```

```
        AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
             RUN DATE (MON/DAY/YR) = 05/05/2016
             START TIME (HR:MIN:SEC) = 14:01:45     USER NO.=
TierraWest-SiteA99368577
             INPUT FILE = C:\Users\Joel\Desktop\AHYMO IN\Skilled Nursing COMBINED
final.txt

    ************************************************************
    *               Skilled Nursing Renaissance, ABQ,NM            *
    ************************************************************
    * 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *
    ************************************************************
    *
    START               TIME=0.0
    *
    *
    RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                        RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                        RAIN DAY=2.75 IN DT=0.05 HR

                   24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                   DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                     0.0000  0.0023  0.0046  0.0071  0.0099  0.0127  0.0159
                     0.0203  0.0272  0.0347  0.0424  0.0509  0.0595  0.0684
                     0.0776  0.0870  0.0974  0.1084  0.1204  0.1437  0.1728
                     0.2117  0.2559  0.3104  0.3831  0.4649  0.6062  0.8258
                     1.2021  1.4666  1.6752  1.7800  1.8719  1.9379  1.9905
                     2.0362  2.0697  2.1005  2.1259  2.1418  2.1530  2.1629
                     2.1722  2.1803  2.1879  2.1953  2.2025  2.2084  2.2118
                     2.2152  2.2186  2.2217  2.2247  2.2278  2.2307  2.2336
                     2.2363  2.2391  2.2417  2.2443  2.2469  2.2494  2.2518
                     2.2542  2.2565  2.2588  2.2611  2.2633  2.2654  2.2676
                     2.2697  2.2717  2.2738  2.2758  2.2778  2.2798  2.2817
                     2.2837  2.2856  2.2874  2.2893  2.2911  2.2930  2.2948
                     2.2965  2.2983  2.3000  2.3017  2.3034  2.3051  2.3068
                     2.3084  2.3100  2.3117  2.3133  2.3148  2.3164  2.3180
                     2.3195  2.3210  2.3225  2.3240  2.3255  2.3269  2.3284
                     2.3298  2.3313  2.3327  2.3341  2.3355  2.3368  2.3382
                     2.3396  2.3409  2.3422  2.3436  2.3449  2.3462  2.3474
                     2.3487  2.3500  2.3513  2.3525  2.3538  2.3551  2.3563
                     2.3576  2.3589  2.3601  2.3614  2.3627  2.3639  2.3652
                     2.3665  2.3677  2.3690  2.3702  2.3715  2.3728  2.3740
                     2.3753  2.3765  2.3778  2.3790  2.3803  2.3815  2.3828
                     2.3840  2.3853  2.3865  2.3878  2.3890  2.3903  2.3915
                     2.3927  2.3940  2.3952  2.3965  2.3977  2.3989  2.4002
                     2.4014  2.4027  2.4039  2.4051  2.4064  2.4076  2.4088
```

2.4101	2.4113	2.4125	2.4137	2.4150	2.4162	2.4174
2.4186	2.4199	2.4211	2.4223	2.4235	2.4247	2.4260
2.4272	2.4284	2.4296	2.4308	2.4320	2.4333	2.4345
2.4357	2.4369	2.4381	2.4393	2.4405	2.4417	2.4429
2.4441	2.4453	2.4465	2.4478	2.4490	2.4502	2.4514
2.4526	2.4538	2.4550	2.4561	2.4573	2.4585	2.4597
2.4609	2.4621	2.4633	2.4645	2.4657	2.4669	2.4681
2.4692	2.4704	2.4716	2.4728	2.4740	2.4752	2.4764
2.4775	2.4787	2.4799	2.4811	2.4822	2.4834	2.4846
2.4858	2.4869	2.4881	2.4893	2.4905	2.4916	2.4928
2.4940	2.4951	2.4963	2.4975	2.4986	2.4998	2.5010
2.5021	2.5033	2.5044	2.5056	2.5068	2.5079	2.5091
2.5102	2.5114	2.5125	2.5137	2.5148	2.5160	2.5171
2.5183	2.5194	2.5206	2.5217	2.5229	2.5240	2.5252
2.5263	2.5274	2.5286	2.5297	2.5309	2.5320	2.5331
2.5343	2.5354	2.5365	2.5377	2.5388	2.5399	2.5411
2.5422	2.5433	2.5445	2.5456	2.5467	2.5478	2.5490
2.5501	2.5512	2.5523	2.5535	2.5546	2.5557	2.5568
2.5579	2.5590	2.5602	2.5613	2.5624	2.5635	2.5646
2.5657	2.5668	2.5679	2.5691	2.5702	2.5713	2.5724
2.5735	2.5746	2.5757	2.5768	2.5779	2.5790	2.5801
2.5812	2.5823	2.5834	2.5845	2.5856	2.5867	2.5878
2.5889	2.5899	2.5910	2.5921	2.5932	2.5943	2.5954
2.5965	2.5976	2.5986	2.5997	2.6008	2.6019	2.6030
2.6040	2.6051	2.6062	2.6073	2.6084	2.6094	2.6105
2.6116	2.6126	2.6137	2.6148	2.6159	2.6169	2.6180
2.6191	2.6201	2.6212	2.6223	2.6233	2.6244	2.6254
2.6265	2.6276	2.6286	2.6297	2.6307	2.6318	2.6328
2.6339	2.6350	2.6360	2.6371	2.6381	2.6392	2.6402
2.6413	2.6423	2.6433	2.6444	2.6454	2.6465	2.6475
2.6486	2.6496	2.6506	2.6517	2.6527	2.6538	2.6548
2.6558	2.6569	2.6579	2.6589	2.6600	2.6610	2.6620
2.6630	2.6641	2.6651	2.6661	2.6672	2.6682	2.6692
2.6702	2.6712	2.6723	2.6733	2.6743	2.6753	2.6763
2.6774	2.6784	2.6794	2.6804	2.6814	2.6824	2.6834
2.6844	2.6854	2.6865	2.6875	2.6885	2.6895	2.6905
2.6915	2.6925	2.6935	2.6945	2.6955	2.6965	2.6975
2.6985	2.6995	2.7005	2.7015	2.7025	2.7034	2.7044
2.7054	2.7064	2.7074	2.7084	2.7094	2.7104	2.7114
2.7123	2.7133	2.7143	2.7153	2.7163	2.7172	2.7182
2.7192	2.7202	2.7211	2.7221	2.7231	2.7241	2.7250
2.7260	2.7270	2.7280	2.7289	2.7299	2.7309	2.7318
2.7328	2.7338	2.7347	2.7357	2.7366	2.7376	2.7386
2.7395	2.7405	2.7414	2.7424	2.7433	2.7443	2.7452
2.7462	2.7472	2.7481	2.7491	2.7500		

*DEVELOPED CONDITIONS
*

```
    *BASIN A1
    *
    COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.00057 SQ MI
                        PER A=0.00 PER B=16.0 PER C=0.00 PER D=84.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   1.8903    CFS   UNIT VOLUME =   0.9941       B =   526.28
 P60 = 2.0100
         AREA =     0.000479 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE
CONSTANT, N =  3.562974
         UNIT PEAK =  0.22229    CFS   UNIT VOLUME =   0.9417       B =   324.90
 P60 = 2.0100
         AREA =     0.000091 SQ MI    IA =   0.50000 INCHES    INF =   1.25000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=1 CODE=1

                                      PARTIAL HYDROGRAPH   100.10


        RUNOFF VOLUME =     2.25684 INCHES     =       0.0686 ACRE-FEET
        PEAK DISCHARGE RATE =       1.65 CFS  AT   1.500 HOURS   BASIN AREA =
0.0006 SQ. MI.



    *
    *
    *BASIN A2
    *
    COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00115 SQ MI
                        PER A=0.00 PER B=27.0 PER C=00.0 PER D=73.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   3.3144    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 2.0100
```

AREA = 0.000840 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.132088HR TP = 0.133300HR K/TP RATIO = 0.990905 SHAPE CONSTANT, N = 3.562974
UNIT PEAK = 0.75681 CFS UNIT VOLUME = 0.9843 B = 324.90 P60 = 2.0100
AREA = 0.000311 SQ MI IA = 0.50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

```
PRINT HYD           ID=2 CODE=1
```

PARTIAL HYDROGRAPH 100.20

RUNOFF VOLUME = 2.08616 INCHES = 0.1280 ACRE-FEET
PEAK DISCHARGE RATE = 3.14 CFS AT 1.500 HOURS BASIN AREA = 0.0012 SQ. MI.

```
*
*
*BASIN A3
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00039 SQ MI
                    PER A=0.00 PER B=45.0 PER C=00.0 PER D=55.00
                    TP=-0.1333 HR MASS RAINFALL=-1
```

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 0.84686 CFS UNIT VOLUME = 0.9865 B = 526.28 P60 = 2.0100
AREA = 0.000215 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.132088HR TP = 0.133300HR K/TP RATIO = 0.990905 SHAPE CONSTANT, N = 3.562974
UNIT PEAK = 0.42776 CFS UNIT VOLUME = 0.9695 B = 324.90 P60 = 2.0100

```
         AREA =     0.000176 SQ MI    IA =   0.50000 INCHES    INF =   1.25000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=3 CODE=1

                                      PARTIAL HYDROGRAPH   100.30


        RUNOFF VOLUME =     1.80685 INCHES     =       0.0376 ACRE-FEET
        PEAK DISCHARGE RATE =       0.98 CFS  AT   1.500 HOURS   BASIN AREA =
0.0004 SQ. MI.



    *
    *
    *BASIN B1-B5
    *
    COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.00147 SQ MI
                        PER A=0.00 PER B=0.00 PER C=00.0 PER D=100.0
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   5.8036    CFS   UNIT VOLUME =   0.9971       B =   526.28
 P60 = 2.0100
         AREA =     0.001470 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=4 CODE=1

                                      PARTIAL HYDROGRAPH   100.40


        RUNOFF VOLUME =     2.50511 INCHES     =       0.1964 ACRE-FEET
        PEAK DISCHARGE RATE =       4.53 CFS  AT   1.500 HOURS   BASIN AREA =
0.0015 SQ. MI.



    *
    *
    *BASIN C2
    *
```

```
    COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.00056 SQ MI
                        PER A=0.00 PER B=17.0 PER C=0.0 PER D=83.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   1.8351    CFS   UNIT VOLUME =   0.9928       B =   526.28
 P60 = 2.0100
         AREA =     0.000465 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE
CONSTANT, N =  3.562974
         UNIT PEAK =  0.23204    CFS   UNIT VOLUME =   0.9417       B =   324.90
 P60 = 2.0100
         AREA =     0.000095 SQ MI    IA =   0.50000 INCHES    INF =   1.25000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=5 CODE=1

                                      PARTIAL HYDROGRAPH   100.50


        RUNOFF VOLUME =     2.24132 INCHES     =       0.0669 ACRE-FEET
        PEAK DISCHARGE RATE =       1.61 CFS  AT   1.500 HOURS   BASIN AREA =
0.0006 SQ. MI.



    *
    *
    *BASIN C3
    COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.00030 SQ MI
                        PER A=0.00 PER B=20.0 PER C=0.0 PER D=80.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =  0.94753    CFS   UNIT VOLUME =   0.9891       B =   526.28
 P60 = 2.0100
         AREA =     0.000240 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
```

0.050000

K = 0.132088HR TP = 0.133300HR K/TP RATIO = 0.990905 SHAPE CONSTANT, N = 3.562974
UNIT PEAK = 0.14624 CFS UNIT VOLUME = 0.9143 B = 324.90 P60 = 2.0100
AREA = 0.000060 SQ MI IA = 0.50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 100.60

RUNOFF VOLUME = 2.19477 INCHES = 0.0351 ACRE-FEET
PEAK DISCHARGE RATE = 0.86 CFS AT 1.500 HOURS BASIN AREA = 0.0003 SQ. MI.

*
*
*BASIN C4
*
COMPUTE NM HYD ID=7 HYD NO=100.7 AREA=0.00071 SQ MI
PER A=0.00 PER B=13.0 PER C=0.0 PER D=87.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 2.4387 CFS UNIT VOLUME = 0.9951 B = 526.28 P60 = 2.0100
AREA = 0.000618 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.132088HR TP = 0.133300HR K/TP RATIO = 0.990905 SHAPE CONSTANT, N = 3.562974
UNIT PEAK = 0.22497 CFS UNIT VOLUME = 0.9417 B = 324.90 P60 = 2.0100
AREA = 0.000092 SQ MI IA = 0.50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =

0.050000

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 100.70

RUNOFF VOLUME = 2.30339 INCHES = 0.0872 ACRE-FEET
PEAK DISCHARGE RATE = 2.08 CFS AT 1.500 HOURS BASIN AREA = 0.0007 SQ. MI.

*
*
*BASIN C1
*
COMPUTE NM HYD ID=8 HYD NO=100.8 AREA=0.00091 SQ MI
PER A=15.0 PER B=54.0 PER C=0.0 PER D=31.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 1.1137 CFS UNIT VOLUME = 0.9891 B = 526.28 P60 = 2.0100
AREA = 0.000282 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.138189HR TP = 0.133300HR K/TP RATIO = 1.036677 SHAPE CONSTANT, N = 3.405054
UNIT PEAK = 1.4760 CFS UNIT VOLUME = 0.9909 B = 313.34 P60 = 2.0100
AREA = 0.000628 SQ MI IA = 0.53261 INCHES INF = 1.34130 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 100.80

RUNOFF VOLUME = 1.39894 INCHES = 0.0679 ACRE-FEET
PEAK DISCHARGE RATE = 1.90 CFS AT 1.500 HOURS BASIN AREA = 0.0009 SQ. MI.

```
**
*ROUTE BASIN C1 THROUGH DETENTION POND NO.1
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=8 CODE=24
                        OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                                0.1000         0.0                 83.00

                                0.1554         0.0082              84.00

                                0.2260         0.0243              85.00

                                0.2793         0.0510              86.00

                                0.3240         0.0913              87.00

                                0.3632         0.1490              88.00


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

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

     0.00       0.00     81.19     -0.015      0.00
     1.20       0.14     83.00      0.000      0.10
     2.40       0.06     85.45      0.036      0.25
     3.60       0.00     84.46      0.016      0.19
     4.80       0.00     83.14      0.001      0.11
     6.00       0.00     83.00      0.000      0.10
     7.20       0.00     83.00      0.000      0.10
     8.40       0.00     83.00      0.000      0.10
     9.60       0.00     83.00      0.000      0.10
    10.80       0.00     83.00      0.000      0.10
    12.00       0.00     83.00      0.000      0.10
    13.20       0.00     83.00      0.000      0.10
    14.40       0.00     83.00      0.000      0.10
    15.60       0.00     83.00      0.000      0.10
    16.80       0.00     83.00      0.000      0.10
    18.00       0.00     83.00      0.000      0.10
    19.20       0.00     83.00      0.000      0.10
    20.40       0.00     83.00      0.000      0.10
    21.60       0.00     83.00      0.000      0.10
    22.80       0.00     83.00      0.000      0.10
    24.00       0.00     83.00      0.000      0.10
    25.20       0.00     83.00      0.000      0.10
    26.40       0.00     83.00      0.000      0.10
```

27.60	0.00	83.00	0.000	0.10
28.80	0.00	83.00	0.000	0.10
30.00	0.00	83.00	0.000	0.10
31.20	0.00	83.00	0.000	0.10
32.40	0.00	83.00	0.000	0.10
33.60	0.00	83.00	0.000	0.10
34.80	0.00	83.00	0.000	0.10
36.00	0.00	83.00	0.000	0.10
37.20	0.00	83.00	0.000	0.10
38.40	0.00	83.00	0.000	0.10
39.60	0.00	83.00	0.000	0.10
40.80	0.00	83.00	0.000	0.10
42.00	0.00	83.00	0.000	0.10
43.20	0.00	83.00	0.000	0.10
44.40	0.00	83.00	0.000	0.10
45.60	0.00	83.00	0.000	0.10
46.80	0.00	83.00	0.000	0.10
48.00	0.00	83.00	0.000	0.10
49.20	0.00	83.00	0.000	0.10
50.40	0.00	83.00	0.000	0.10
51.60	0.00	83.00	0.000	0.10
52.80	0.00	83.00	0.000	0.10
54.00	0.00	83.00	0.000	0.10
55.20	0.00	83.00	0.000	0.10
56.40	0.00	83.00	0.000	0.10
57.60	0.00	83.00	0.000	0.10
58.80	0.00	83.00	0.000	0.10
60.00	0.00	83.00	0.000	0.10
61.20	0.00	83.00	0.000	0.10
62.40	0.00	83.00	0.000	0.10
63.60	0.00	83.00	0.000	0.10
64.80	0.00	83.00	0.000	0.10
66.00	0.00	83.00	0.000	0.10

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
67.20	0.00	83.00	0.000	0.10
68.40	0.00	83.00	0.000	0.10
69.60	0.00	83.00	0.000	0.10
70.80	0.00	83.00	0.000	0.10
72.00	0.00	83.00	0.000	0.10
73.20	0.00	83.00	0.000	0.10
74.40	0.00	83.00	0.000	0.10
75.60	0.00	83.00	0.000	0.10
76.80	0.00	83.00	0.000	0.10
78.00	0.00	83.00	0.000	0.10
79.20	0.00	83.00	0.000	0.10

80.40	0.00	83.00	0.000	0.10
81.60	0.00	83.00	0.000	0.10
82.80	0.00	83.00	0.000	0.10
84.00	0.00	83.00	0.000	0.10
85.20	0.00	83.00	0.000	0.10
86.40	0.00	83.00	0.000	0.10
87.60	0.00	83.00	0.000	0.10
88.80	0.00	83.00	0.000	0.10
90.00	0.00	83.00	0.000	0.10
91.20	0.00	83.00	0.000	0.10
92.40	0.00	83.00	0.000	0.10
93.60	0.00	83.00	0.000	0.10
94.80	0.00	83.00	0.000	0.10
96.00	0.00	83.00	0.000	0.10
97.20	0.00	83.00	0.000	0.10
98.40	0.00	83.00	0.000	0.10
99.60	0.00	83.00	0.000	0.10
100.80	0.00	83.00	0.000	0.10
102.00	0.00	83.00	0.000	0.10
103.20	0.00	83.00	0.000	0.10
104.40	0.00	83.00	0.000	0.10
105.60	0.00	83.00	0.000	0.10
106.80	0.00	83.00	0.000	0.10
108.00	0.00	83.00	0.000	0.10
109.20	0.00	83.00	0.000	0.10
110.40	0.00	83.00	0.000	0.10
111.60	0.00	83.00	0.000	0.10
112.80	0.00	83.00	0.000	0.10
114.00	0.00	83.00	0.000	0.10
115.20	0.00	83.00	0.000	0.10
116.40	0.00	83.00	0.000	0.10
117.60	0.00	83.00	0.000	0.10
118.80	0.00	83.00	0.000	0.10
120.00	0.00	83.00	0.000	0.10
121.20	0.00	83.00	0.000	0.10
122.40	0.00	83.00	0.000	0.10
123.60	0.00	83.00	0.000	0.10
124.80	0.00	83.00	0.000	0.10
126.00	0.00	83.00	0.000	0.10
127.20	0.00	83.00	0.000	0.10
128.40	0.00	83.00	0.000	0.10
129.60	0.00	83.00	0.000	0.10
130.80	0.00	83.00	0.000	0.10
132.00	0.00	83.00	0.000	0.10
133.20	0.00	83.00	0.000	0.10

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

134.40	0.00	83.00	0.000	0.10
135.60	0.00	83.00	0.000	0.10
136.80	0.00	83.00	0.000	0.10
138.00	0.00	83.00	0.000	0.10
139.20	0.00	83.00	0.000	0.10
140.40	0.00	83.00	0.000	0.10
141.60	0.00	83.00	0.000	0.10
142.80	0.00	83.00	0.000	0.10
144.00	0.00	83.00	0.000	0.10
145.20	0.00	83.00	0.000	0.10
146.40	0.00	83.00	0.000	0.10
147.60	0.00	83.00	0.000	0.10
148.80	0.00	83.00	0.000	0.10
150.00	0.00	83.00	0.000	0.10
151.20	0.00	83.00	0.000	0.10
152.40	0.00	83.00	0.000	0.10
153.60	0.00	83.00	0.000	0.10
154.80	0.00	83.00	0.000	0.10
156.00	0.00	83.00	0.000	0.10
157.20	0.00	83.00	0.000	0.10
158.40	0.00	83.00	0.000	0.10
159.60	0.00	83.00	0.000	0.10
160.80	0.00	83.00	0.000	0.10
162.00	0.00	83.00	0.000	0.10
163.20	0.00	83.00	0.000	0.10
164.40	0.00	83.00	0.000	0.10
165.60	0.00	83.00	0.000	0.10
166.80	0.00	83.00	0.000	0.10
168.00	0.00	83.00	0.000	0.10
169.20	0.00	83.00	0.000	0.10
170.40	0.00	83.00	0.000	0.10
171.60	0.00	83.00	0.000	0.10
172.80	0.00	83.00	0.000	0.10
174.00	0.00	83.00	0.000	0.10
175.20	0.00	83.00	0.000	0.10
176.40	0.00	83.00	0.000	0.10
177.60	0.00	83.00	0.000	0.10
178.80	0.00	83.00	0.000	0.10
180.00	0.00	83.00	0.000	0.10
181.20	0.00	83.00	0.000	0.10
182.40	0.00	83.00	0.000	0.10
183.60	0.00	83.00	0.000	0.10
184.80	0.00	83.00	0.000	0.10
186.00	0.00	83.00	0.000	0.10
187.20	0.00	83.00	0.000	0.10
188.40	0.00	83.00	0.000	0.10
189.60	0.00	83.00	0.000	0.10

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      190.80       0.00     83.00      0.000      0.10
      192.00       0.00     83.00      0.000      0.10
      193.20       0.00     83.00      0.000      0.10
      194.40       0.00     83.00      0.000      0.10
      195.60       0.00     83.00      0.000      0.10
      196.80       0.00     83.00      0.000      0.10
      198.00       0.00     83.00      0.000      0.10
      199.20       0.00     83.00      0.000      0.10
    PEAK DISCHARGE =        0.259 CFS - PEAK OCCURS AT HOUR    1.95
    MAXIMUM WATER SURFACE ELEVATION =       85.626 <87.0 OK
    MAXIMUM STORAGE =        0.0410 AC-FT      INCREMENTAL TIME=    0.050000HRS

   *
   PRINT HYD           ID=55  CODE=1

                                    PARTIAL HYDROGRAPH   200.10


       RUNOFF VOLUME =    34.64382 INCHES     =       1.6814 ACRE-FEET
       PEAK DISCHARGE RATE =       0.26 CFS  AT   1.950 HOURS   BASIN AREA =
0.0009 SQ. MI.



   *
   *
   *BASIN C6
   *
   COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.00050 SQ MI
                       PER A=0.00 PER B=21.0 PER C=0.0 PER D=79.0
                       TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   1.5595    CFS   UNIT VOLUME =   0.9928       B =   526.28
 P60 = 2.0100
        AREA =     0.000395 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


        K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE
CONSTANT, N =  3.562974
        UNIT PEAK =  0.25592    CFS   UNIT VOLUME =   0.9487       B =   324.90
 P60 = 2.0100
        AREA =     0.000105 SQ MI    IA =   0.50000 INCHES    INF =   1.25000
INCHES PER HOUR
```

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 100.90

RUNOFF VOLUME = 2.17926 INCHES = 0.0581 ACRE-FEET
PEAK DISCHARGE RATE = 1.41 CFS AT 1.500 HOURS BASIN AREA = 0.0005 SQ. MI.

*
*
*BASIN C5
*
COMPUTE NM HYD ID=10 HYD NO=100.10 AREA=0.00029 SQ MI
PER A=0.00 PER B=17.0 PER C=0.0 PER D=83.0
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 0.95030 CFS UNIT VOLUME = 0.9891 B = 526.28 P60 = 2.0100
AREA = 0.000241 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.132088HR TP = 0.133300HR K/TP RATIO = 0.990905 SHAPE CONSTANT, N = 3.562974
UNIT PEAK = 0.12016 CFS UNIT VOLUME = 0.8894 B = 324.90 P60 = 2.0100
AREA = 0.000049 SQ MI IA = 0.50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 100.10

RUNOFF VOLUME = 2.24132 INCHES = 0.0347 ACRE-FEET
PEAK DISCHARGE RATE = 0.84 CFS AT 1.500 HOURS BASIN AREA =

0.0003 SQ. MI.

```
    *
    *
    *BASIN D1
    *
    COMPUTE NM HYD      ID=11 HYD NO=100.11 AREA=0.00018 SQ MI
                        PER A=0.00 PER B=30.0 PER C=0.0 PER D=70.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =  0.49745    CFS   UNIT VOLUME =   0.9791       B =   526.28
 P60 = 2.0100
         AREA =     0.000126 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE
CONSTANT, N =  3.562974
         UNIT PEAK =  0.13162    CFS   UNIT VOLUME =   0.9027       B =   324.90
 P60 = 2.0100
         AREA =     0.000054 SQ MI    IA =   0.50000 INCHES    INF =   1.25000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=11 CODE=1

                                      PARTIAL HYDROGRAPH   100.11


        RUNOFF VOLUME =     2.03961 INCHES     =       0.0196 ACRE-FEET
        PEAK DISCHARGE RATE =       0.50 CFS  AT   1.500 HOURS   BASIN AREA =
0.0002 SQ. MI.



    *
    *
    *COMBINE POND1 DISCHARGE WITH BASINS ROUTED TO POND NO.2
    *
    ADD HYD                         ID=50 HYD NO=100.21 ID=1 ID=2
```

```
    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=3

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=4

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=5

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=6

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=7

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=9

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=10

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=11

    ADD HYD                          ID=50 HYD NO=100.21 ID=50 ID=55

    *
    PRINT HYD           ID=50 CODE=1

                                       PARTIAL HYDROGRAPH   100.21


        RUNOFF VOLUME =     6.43692 INCHES     =       2.4134 ACRE-FEET
        PEAK DISCHARGE RATE =      17.79 CFS  AT   1.500 HOURS   BASIN AREA =
0.0070 SQ. MI.



    *
    *ROUTE POND1 DISCHARGE & BASINS A1-3,B1-5,C2-6,D1 THRU COMBINED UG/POND 2 DETENT
    ROUTE RESERVOIR     ID=56 HYD NO=200.3 INFLOW ID=50 CODE=24
                            OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                                    0.0957         0.0000              77.00

                                    0.1435         0.0217              77.50

                                    0.1790         0.0587              78.00

                                    0.2085         0.1027              78.50

                                    0.2343         0.1499              79.00

                                    0.2576         0.1972              79.50

                                    0.2789         0.2414              80.00
```

0.2987	0.2784	80.50
0.3173	0.3000	81.00
0.3515	0.3609	82.00
0.3827	0.4218	83.00
0.4115	0.4827	84.00
0.4384	0.5436	85.00
0.4638	0.6045	86.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	76.00	-0.043	0.00
1.20	2.59	77.60	0.029	0.15
2.40	0.77	85.72	0.588	0.46
3.60	0.22	85.52	0.575	0.45
4.80	0.16	85.09	0.549	0.44
6.00	0.18	84.65	0.522	0.43
7.20	0.18	84.26	0.499	0.42
8.40	0.18	83.88	0.476	0.41
9.60	0.18	83.52	0.453	0.40
10.80	0.18	83.17	0.432	0.39
12.00	0.18	82.84	0.412	0.38
13.20	0.18	82.52	0.392	0.37
14.40	0.17	82.21	0.374	0.36
15.60	0.17	81.92	0.356	0.35
16.80	0.17	81.64	0.339	0.34
18.00	0.17	81.37	0.322	0.33
19.20	0.17	81.11	0.307	0.32
20.40	0.17	80.82	0.292	0.31
21.60	0.17	80.50	0.278	0.30
22.80	0.16	80.33	0.265	0.29
24.00	0.16	80.16	0.253	0.29
25.20	0.10	79.94	0.236	0.28
26.40	0.10	79.74	0.219	0.27
27.60	0.10	79.56	0.203	0.26
28.80	0.10	79.39	0.187	0.25
30.00	0.10	79.24	0.172	0.25
31.20	0.10	79.09	0.158	0.24
32.40	0.10	78.95	0.145	0.23

33.60	0.10	78.81	0.132	0.22
34.80	0.10	78.68	0.120	0.22
36.00	0.10	78.56	0.109	0.21
37.20	0.10	78.45	0.098	0.21
38.40	0.10	78.33	0.088	0.20
39.60	0.10	78.22	0.078	0.19
40.80	0.10	78.12	0.070	0.19
42.00	0.10	78.03	0.061	0.18
43.20	0.10	77.93	0.054	0.17
44.40	0.10	77.84	0.047	0.17
45.60	0.10	77.75	0.040	0.16
46.80	0.10	77.67	0.034	0.16
48.00	0.10	77.60	0.029	0.15
49.20	0.10	77.54	0.024	0.15
50.40	0.10	77.46	0.020	0.14
51.60	0.10	77.38	0.016	0.13
52.80	0.10	77.31	0.014	0.13
54.00	0.10	77.26	0.011	0.12
55.20	0.10	77.22	0.009	0.12
56.40	0.10	77.18	0.008	0.11
57.60	0.10	77.16	0.007	0.11
58.80	0.10	77.14	0.006	0.11
60.00	0.10	77.12	0.005	0.11
61.20	0.10	77.10	0.004	0.11
62.40	0.10	77.09	0.004	0.10
63.60	0.10	77.08	0.004	0.10
64.80	0.10	77.08	0.003	0.10
66.00	0.10	77.07	0.003	0.10

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
67.20	0.10	77.06	0.003	0.10
68.40	0.10	77.06	0.003	0.10
69.60	0.10	77.06	0.003	0.10
70.80	0.10	77.06	0.002	0.10
72.00	0.10	77.05	0.002	0.10
73.20	0.10	77.05	0.002	0.10
74.40	0.10	77.05	0.002	0.10
75.60	0.10	77.05	0.002	0.10
76.80	0.10	77.05	0.002	0.10
78.00	0.10	77.05	0.002	0.10
79.20	0.10	77.05	0.002	0.10
80.40	0.10	77.05	0.002	0.10
81.60	0.10	77.05	0.002	0.10
82.80	0.10	77.05	0.002	0.10
84.00	0.10	77.05	0.002	0.10
85.20	0.10	77.05	0.002	0.10

86.40	0.10	77.05	0.002	0.10
87.60	0.10	77.05	0.002	0.10
88.80	0.10	77.05	0.002	0.10
90.00	0.10	77.05	0.002	0.10
91.20	0.10	77.05	0.002	0.10
92.40	0.10	77.05	0.002	0.10
93.60	0.10	77.05	0.002	0.10
94.80	0.10	77.05	0.002	0.10
96.00	0.10	77.05	0.002	0.10
97.20	0.10	77.05	0.002	0.10
98.40	0.10	77.05	0.002	0.10
99.60	0.10	77.05	0.002	0.10
100.80	0.10	77.05	0.002	0.10
102.00	0.10	77.05	0.002	0.10
103.20	0.10	77.05	0.002	0.10
104.40	0.10	77.04	0.002	0.10
105.60	0.10	77.04	0.002	0.10
106.80	0.10	77.04	0.002	0.10
108.00	0.10	77.04	0.002	0.10
109.20	0.10	77.04	0.002	0.10
110.40	0.10	77.04	0.002	0.10
111.60	0.10	77.04	0.002	0.10
112.80	0.10	77.04	0.002	0.10
114.00	0.10	77.04	0.002	0.10
115.20	0.10	77.04	0.002	0.10
116.40	0.10	77.04	0.002	0.10
117.60	0.10	77.04	0.002	0.10
118.80	0.10	77.04	0.002	0.10
120.00	0.10	77.04	0.002	0.10
121.20	0.10	77.04	0.002	0.10
122.40	0.10	77.04	0.002	0.10
123.60	0.10	77.04	0.002	0.10
124.80	0.10	77.04	0.002	0.10
126.00	0.10	77.04	0.002	0.10
127.20	0.10	77.04	0.002	0.10
128.40	0.10	77.04	0.002	0.10
129.60	0.10	77.04	0.002	0.10
130.80	0.10	77.04	0.002	0.10
132.00	0.10	77.04	0.002	0.10
133.20	0.10	77.04	0.002	0.10

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
134.40	0.10	77.04	0.002	0.10
135.60	0.10	77.04	0.002	0.10
136.80	0.10	77.04	0.002	0.10
138.00	0.10	77.04	0.002	0.10

139.20	0.10	77.04	0.002	0.10
140.40	0.10	77.04	0.002	0.10
141.60	0.10	77.04	0.002	0.10
142.80	0.10	77.04	0.002	0.10
144.00	0.10	77.04	0.002	0.10
145.20	0.10	77.04	0.002	0.10
146.40	0.10	77.04	0.002	0.10
147.60	0.10	77.04	0.002	0.10
148.80	0.10	77.04	0.002	0.10
150.00	0.10	77.04	0.002	0.10
151.20	0.10	77.04	0.002	0.10
152.40	0.10	77.04	0.002	0.10
153.60	0.10	77.04	0.002	0.10
154.80	0.10	77.04	0.002	0.10
156.00	0.10	77.04	0.002	0.10
157.20	0.10	77.04	0.002	0.10
158.40	0.10	77.04	0.002	0.10
159.60	0.10	77.04	0.002	0.10
160.80	0.10	77.04	0.002	0.10
162.00	0.10	77.04	0.002	0.10
163.20	0.10	77.04	0.002	0.10
164.40	0.10	77.04	0.002	0.10
165.60	0.10	77.04	0.002	0.10
166.80	0.10	77.04	0.002	0.10
168.00	0.10	77.04	0.002	0.10
169.20	0.10	77.04	0.002	0.10
170.40	0.10	77.04	0.002	0.10
171.60	0.10	77.04	0.002	0.10
172.80	0.10	77.04	0.002	0.10
174.00	0.10	77.04	0.002	0.10
175.20	0.10	77.04	0.002	0.10
176.40	0.10	77.04	0.002	0.10
177.60	0.10	77.04	0.002	0.10
178.80	0.10	77.04	0.002	0.10
180.00	0.10	77.04	0.002	0.10
181.20	0.10	77.04	0.002	0.10
182.40	0.10	77.04	0.002	0.10
183.60	0.10	77.04	0.002	0.10
184.80	0.10	77.04	0.002	0.10
186.00	0.10	77.04	0.002	0.10
187.20	0.10	77.04	0.002	0.10
188.40	0.10	77.04	0.002	0.10
189.60	0.10	77.04	0.002	0.10
190.80	0.10	77.04	0.002	0.10
192.00	0.10	77.04	0.002	0.10
193.20	0.10	77.04	0.002	0.10
194.40	0.10	77.04	0.002	0.10
195.60	0.10	77.04	0.002	0.10

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      196.80       0.10     77.04      0.002      0.10
      198.00       0.10     77.04      0.002      0.10
      199.20       0.10     77.04      0.002      0.10
     PEAK DISCHARGE =        0.457 CFS - PEAK OCCURS AT HOUR    2.55
     MAXIMUM WATER SURFACE ELEVATION =       85.751 <86, THEREFORE OK
     MAXIMUM STORAGE =        0.5893 AC-FT      INCREMENTAL TIME=    0.050000HRS

    *
    PRINT HYD           ID=56  CODE=1

                                      PARTIAL HYDROGRAPH   200.30


        RUNOFF VOLUME =     6.43174 INCHES     =       2.4115 ACRE-FEET
        PEAK DISCHARGE RATE =       0.46 CFS  AT   2.550 HOURS   BASIN AREA =
0.0070 SQ. MI.



    *
    *BASIN D2
    *
    COMPUTE NM HYD      ID=12 HYD NO=100.12 AREA=0.00067 SQ MI
                        PER A=0.00 PER B=97.0 PER C=0.0 PER D=3.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =  0.79356E-01CFS   UNIT VOLUME =   0.8994       B =   526.28
 P60 = 2.0100
         AREA =     0.000020 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE
CONSTANT, N =  3.562974
         UNIT PEAK =   1.5841    CFS   UNIT VOLUME =   0.9932       B =   324.90
 P60 = 2.0100
         AREA =     0.000650 SQ MI    IA =   0.50000 INCHES    INF =   1.25000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=12 CODE=1

                                      PARTIAL HYDROGRAPH   100.12
```

RUNOFF VOLUME = 0.99998 INCHES = 0.0357 ACRE-FEET
PEAK DISCHARGE RATE = 1.19 CFS AT 1.500 HOURS BASIN AREA = 0.0007 SQ. MI.

*
*
*ROUTE BASIN D2 THROUGH POND NO 3
ROUTE RESERVOIR ID=57 HYD NO=200.3 INFLOW ID=12 CODE=24

OUTFLOW (CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0100	0.0000	72.00
0.0500	0.0393	73.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	71.75	-0.010	0.00
1.20	0.01	72.00	0.000	0.01
2.40	0.04	72.79	0.031	0.04
3.60	0.00	72.71	0.028	0.04
4.80	0.00	72.62	0.024	0.03
6.00	0.00	72.54	0.021	0.03
7.20	0.00	72.46	0.018	0.03
8.40	0.00	72.39	0.015	0.03
9.60	0.00	72.33	0.013	0.02
10.80	0.00	72.28	0.011	0.02
12.00	0.00	72.22	0.009	0.02
13.20	0.00	72.18	0.007	0.02
14.40	0.00	72.14	0.005	0.02
15.60	0.00	72.10	0.004	0.01
16.80	0.00	72.07	0.003	0.01
18.00	0.00	72.04	0.001	0.01
19.20	0.00	72.01	0.000	0.01
20.40	0.00	72.00	0.000	0.01
21.60	0.00	72.00	0.000	0.01
22.80	0.00	72.00	0.000	0.01
24.00	0.00	72.00	0.000	0.01
25.20	0.00	72.00	0.000	0.01
26.40	0.00	72.00	0.000	0.01
27.60	0.00	72.00	0.000	0.01
28.80	0.00	72.00	0.000	0.01

30.00	0.00	72.00	0.000	0.01
31.20	0.00	72.00	0.000	0.01
32.40	0.00	72.00	0.000	0.01
33.60	0.00	72.00	0.000	0.01
34.80	0.00	72.00	0.000	0.01
36.00	0.00	72.00	0.000	0.01
37.20	0.00	72.00	0.000	0.01
38.40	0.00	72.00	0.000	0.01
39.60	0.00	72.00	0.000	0.01
40.80	0.00	72.00	0.000	0.01
42.00	0.00	72.00	0.000	0.01
43.20	0.00	72.00	0.000	0.01
44.40	0.00	72.00	0.000	0.01
45.60	0.00	72.00	0.000	0.01
46.80	0.00	72.00	0.000	0.01
48.00	0.00	72.00	0.000	0.01
49.20	0.00	72.00	0.000	0.01
50.40	0.00	72.00	0.000	0.01
51.60	0.00	72.00	0.000	0.01
52.80	0.00	72.00	0.000	0.01
54.00	0.00	72.00	0.000	0.01
55.20	0.00	72.00	0.000	0.01
56.40	0.00	72.00	0.000	0.01
57.60	0.00	72.00	0.000	0.01
58.80	0.00	72.00	0.000	0.01
60.00	0.00	72.00	0.000	0.01
61.20	0.00	72.00	0.000	0.01
62.40	0.00	72.00	0.000	0.01
63.60	0.00	72.00	0.000	0.01
64.80	0.00	72.00	0.000	0.01
66.00	0.00	72.00	0.000	0.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
67.20	0.00	72.00	0.000	0.01
68.40	0.00	72.00	0.000	0.01
69.60	0.00	72.00	0.000	0.01
70.80	0.00	72.00	0.000	0.01
72.00	0.00	72.00	0.000	0.01
73.20	0.00	72.00	0.000	0.01
74.40	0.00	72.00	0.000	0.01
75.60	0.00	72.00	0.000	0.01
76.80	0.00	72.00	0.000	0.01
78.00	0.00	72.00	0.000	0.01
79.20	0.00	72.00	0.000	0.01
80.40	0.00	72.00	0.000	0.01
81.60	0.00	72.00	0.000	0.01

82.80	0.00	72.00	0.000	0.01
84.00	0.00	72.00	0.000	0.01
85.20	0.00	72.00	0.000	0.01
86.40	0.00	72.00	0.000	0.01
87.60	0.00	72.00	0.000	0.01
88.80	0.00	72.00	0.000	0.01
90.00	0.00	72.00	0.000	0.01
91.20	0.00	72.00	0.000	0.01
92.40	0.00	72.00	0.000	0.01
93.60	0.00	72.00	0.000	0.01
94.80	0.00	72.00	0.000	0.01
96.00	0.00	72.00	0.000	0.01
97.20	0.00	72.00	0.000	0.01
98.40	0.00	72.00	0.000	0.01
99.60	0.00	72.00	0.000	0.01
100.80	0.00	72.00	0.000	0.01
102.00	0.00	72.00	0.000	0.01
103.20	0.00	72.00	0.000	0.01
104.40	0.00	72.00	0.000	0.01
105.60	0.00	72.00	0.000	0.01
106.80	0.00	72.00	0.000	0.01
108.00	0.00	72.00	0.000	0.01
109.20	0.00	72.00	0.000	0.01
110.40	0.00	72.00	0.000	0.01
111.60	0.00	72.00	0.000	0.01
112.80	0.00	72.00	0.000	0.01
114.00	0.00	72.00	0.000	0.01
115.20	0.00	72.00	0.000	0.01
116.40	0.00	72.00	0.000	0.01
117.60	0.00	72.00	0.000	0.01
118.80	0.00	72.00	0.000	0.01
120.00	0.00	72.00	0.000	0.01
121.20	0.00	72.00	0.000	0.01
122.40	0.00	72.00	0.000	0.01
123.60	0.00	72.00	0.000	0.01
124.80	0.00	72.00	0.000	0.01
126.00	0.00	72.00	0.000	0.01
127.20	0.00	72.00	0.000	0.01
128.40	0.00	72.00	0.000	0.01
129.60	0.00	72.00	0.000	0.01
130.80	0.00	72.00	0.000	0.01
132.00	0.00	72.00	0.000	0.01
133.20	0.00	72.00	0.000	0.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
134.40	0.00	72.00	0.000	0.01

135.60	0.00	72.00	0.000	0.01
136.80	0.00	72.00	0.000	0.01
138.00	0.00	72.00	0.000	0.01
139.20	0.00	72.00	0.000	0.01
140.40	0.00	72.00	0.000	0.01
141.60	0.00	72.00	0.000	0.01
142.80	0.00	72.00	0.000	0.01
144.00	0.00	72.00	0.000	0.01
145.20	0.00	72.00	0.000	0.01
146.40	0.00	72.00	0.000	0.01
147.60	0.00	72.00	0.000	0.01
148.80	0.00	72.00	0.000	0.01
150.00	0.00	72.00	0.000	0.01
151.20	0.00	72.00	0.000	0.01
152.40	0.00	72.00	0.000	0.01
153.60	0.00	72.00	0.000	0.01
154.80	0.00	72.00	0.000	0.01
156.00	0.00	72.00	0.000	0.01
157.20	0.00	72.00	0.000	0.01
158.40	0.00	72.00	0.000	0.01
159.60	0.00	72.00	0.000	0.01
160.80	0.00	72.00	0.000	0.01
162.00	0.00	72.00	0.000	0.01
163.20	0.00	72.00	0.000	0.01
164.40	0.00	72.00	0.000	0.01
165.60	0.00	72.00	0.000	0.01
166.80	0.00	72.00	0.000	0.01
168.00	0.00	72.00	0.000	0.01
169.20	0.00	72.00	0.000	0.01
170.40	0.00	72.00	0.000	0.01
171.60	0.00	72.00	0.000	0.01
172.80	0.00	72.00	0.000	0.01
174.00	0.00	72.00	0.000	0.01
175.20	0.00	72.00	0.000	0.01
176.40	0.00	72.00	0.000	0.01
177.60	0.00	72.00	0.000	0.01
178.80	0.00	72.00	0.000	0.01
180.00	0.00	72.00	0.000	0.01
181.20	0.00	72.00	0.000	0.01
182.40	0.00	72.00	0.000	0.01
183.60	0.00	72.00	0.000	0.01
184.80	0.00	72.00	0.000	0.01
186.00	0.00	72.00	0.000	0.01
187.20	0.00	72.00	0.000	0.01
188.40	0.00	72.00	0.000	0.01
189.60	0.00	72.00	0.000	0.01
190.80	0.00	72.00	0.000	0.01
192.00	0.00	72.00	0.000	0.01

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                                        AHYMO
      193.20       0.00     72.00      0.000      0.01
      194.40       0.00     72.00      0.000      0.01
      195.60       0.00     72.00      0.000      0.01
      196.80       0.00     72.00      0.000      0.01
      198.00       0.00     72.00      0.000      0.01
      199.20       0.00     72.00      0.000      0.01
     PEAK DISCHARGE =        0.042 CFS - PEAK OCCURS AT HOUR    2.35
     MAXIMUM WATER SURFACE ELEVATION =       72.790 <73.0, THEREFORE OK
     MAXIMUM STORAGE =        0.0310 AC-FT      INCREMENTAL TIME=    0.050000HRS

    *
    PRINT HYD           ID=57  CODE=1

                                        PARTIAL HYDROGRAPH   200.30


        RUNOFF VOLUME =     5.18071 INCHES     =       0.1851 ACRE-FEET
        PEAK DISCHARGE RATE =       0.04 CFS  AT   2.350 HOURS   BASIN AREA =
0.0007 SQ. MI.



    *
    ADD HYD                         ID=58 HYD NO=100.22 ID=56 ID=57

    *
    PRINT HYD           ID=58 CODE=1

                                        PARTIAL HYDROGRAPH   100.22


        RUNOFF VOLUME =     6.32291 INCHES     =       2.5966 ACRE-FEET
        PEAK DISCHARGE RATE =       0.50 CFS  AT   2.550 HOURS   BASIN AREA =
0.0077 SQ. MI.
                                PEAK DISCHARGE RATE=MAX Q ALLOWED,
                                THEREFORE OK
    *
    *
    FINISH

        NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:01:45
```

APPENDIX B

HYDRAULIC ANALYSIS

Tract 9-D
RENAISSANCE CENTER
REC. 3/13/91, VOL. 91c, FOL. 76

Renaissance Boulevard, N.E.
(86' Right-of-Way)

UNDERGROUND DETENTION

POND #3

SD MH

4" PVC @ 0.5%
0.04

8" PVC @ 5.1%
0.46

12" @ 1%
2.63

POND #1

WATER QUALITY MH

18" @ 1.7% HDPE
14.21

6" PVC
0.26

12" @ 1.0%

12" @ 3.6%

POND #2

24" RCP OR HDPE
8.98

8" @ 0.5%
1.19

12" @ 0.7%
3.94

4.42

12" @ 1.0%

10" @ 0.5%
1.61

FF=5087.50

8" @ 0.5%
0.68

8" @ 1%
1.28

18" RCP OR HDPE @ 0.33%
4.56

18" HDPE
(ADS N-12 OR EQUAL)
@ 0.45%

12" PVC @ 0.8%

1.57

1.57

2.99

4.56

SD MH

0.47

Chappell Drive, N.E.
(Varied Right-of-Way)

Commerce Drive, N.E.
(89' Right-of-Way)

(05/27/ RENAISSAN

N

NTS

LEGEND

FLOW DIRECTION

x.xx DENOTES Q100 (CFS)

STORM DRAIN SCHEMATIC

Worksheet for Concrete Flume

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.50	ft
Bottom Width	2.00	ft

Results

Discharge	5.50	ft^3/s
Flow Area	1.00	ft^2
Wetted Perimeter	3.00	ft
Hydraulic Radius	0.33	ft
Top Width	2.00	ft
Critical Depth	0.62	ft
Critical Slope	0.00549	ft/ft
Velocity	5.50	ft/s
Velocity Head	0.47	ft
Specific Energy	0.97	ft
Froude Number	1.37	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.50	ft
Critical Depth	0.62	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00549	ft/ft

Worksheet for Concrete Flume

Messages

Notes

Concrete flume capacity (5.5 cfs) at max flow depth of 0.5' exceeds required flow from Basin C2 (1.54 cfs) and Basin C4 (1.99 cfs). OK

Worksheet for Circular Pipe - A1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	12.00	in
Discharge	1.57	ft³/s

Results

Normal Depth	0.57	ft
Flow Area	0.46	ft²
Wetted Perimeter	1.71	ft
Hydraulic Radius	0.27	ft
Top Width	0.99	ft
Critical Depth	0.53	ft
Percent Full	57.2	%
Critical Slope	0.00632	ft/ft
Velocity	3.38	ft/s
Velocity Head	0.18	ft
Specific Energy	0.75	ft
Froude Number	0.87	
Maximum Discharge	2.71	ft³/s
Discharge Full	2.52	ft³/s
Slope Full	0.00194	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.18	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - A2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	18.00	in
Discharge	4.56	ft³/s

Results

Normal Depth	0.85	ft
Flow Area	1.03	ft²
Wetted Perimeter	2.56	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.82	ft
Percent Full	56.6	%
Critical Slope	0.00561	ft/ft
Velocity	4.42	ft/s
Velocity Head	0.30	ft
Specific Energy	1.15	ft
Froude Number	0.93	
Maximum Discharge	7.99	ft³/s
Discharge Full	7.43	ft³/s
Slope Full	0.00188	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	56.64	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - B1,B2

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.00500	ft/ft
Normal Depth	0.66	ft
Diameter	8.00	in

Results

Discharge	1.16	ft³/s
Flow Area	0.35	ft²
Wetted Perimeter	1.96	ft
Hydraulic Radius	0.18	ft
Top Width	0.13	ft
Critical Depth	0.51	ft
Percent Full	99.0	%
Critical Slope	0.00624	ft/ft
Velocity	3.32	ft/s
Velocity Head	0.17	ft
Specific Energy	0.83	ft
Froude Number	0.36	
Maximum Discharge	1.19	ft³/s
Discharge Full	1.11	ft³/s
Slope Full	0.00543	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	99.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - B3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.00500	ft/ft
Diameter	10.00	in
Discharge	1.61	ft³/s

Results

Normal Depth	0.56	ft
Flow Area	0.39	ft²
Wetted Perimeter	1.61	ft
Hydraulic Radius	0.24	ft
Top Width	0.78	ft
Critical Depth	0.57	ft
Percent Full	67.6	%
Critical Slope	0.00487	ft/ft
Velocity	4.10	ft/s
Velocity Head	0.26	ft
Specific Energy	0.83	ft
Froude Number	1.02	
Maximum Discharge	2.17	ft³/s
Discharge Full	2.01	ft³/s
Slope Full	0.00320	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.60	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - B4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.00700	ft/ft
Diameter	12.00	in
Discharge	3.94	ft³/s

Results

Normal Depth	0.84	ft
Flow Area	0.70	ft²
Wetted Perimeter	2.31	ft
Hydraulic Radius	0.30	ft
Top Width	0.74	ft
Critical Depth	0.84	ft
Percent Full	83.6	%
Critical Slope	0.00691	ft/ft
Velocity	5.62	ft/s
Velocity Head	0.49	ft
Specific Energy	1.33	ft
Froude Number	1.02	
Maximum Discharge	4.17	ft³/s
Discharge Full	3.87	ft³/s
Slope Full	0.00724	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.57	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - B5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	12.00	in
Discharge	4.42	ft³/s

Results

Normal Depth	0.78	ft
Flow Area	0.66	ft²
Wetted Perimeter	2.17	ft
Hydraulic Radius	0.30	ft
Top Width	0.83	ft
Critical Depth	0.88	ft
Percent Full	78.1	%
Critical Slope	0.00819	ft/ft
Velocity	6.71	ft/s
Velocity Head	0.70	ft
Specific Energy	1.48	ft
Froude Number	1.33	
Maximum Discharge	4.98	ft³/s
Discharge Full	4.63	ft³/s
Slope Full	0.00911	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.14	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - BASINS As+Bs TO POND #2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	24.00	in
Discharge	8.98	ft³/s

Results

Normal Depth	1.07	ft
Flow Area	1.71	ft²
Wetted Perimeter	3.29	ft
Hydraulic Radius	0.52	ft
Top Width	1.99	ft
Critical Depth	1.07	ft
Percent Full	53.6	%
Critical Slope	0.00503	ft/ft
Velocity	5.24	ft/s
Velocity Head	0.43	ft
Specific Energy	1.50	ft
Froude Number	1.00	
Maximum Discharge	17.21	ft³/s
Discharge Full	16.00	ft³/s
Slope Full	0.00158	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.58	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - C1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	6.00	in
Discharge	0.26	ft³/s

Results

Normal Depth	0.21	ft
Flow Area	0.08	ft²
Wetted Perimeter	0.70	ft
Hydraulic Radius	0.11	ft
Top Width	0.49	ft
Critical Depth	0.26	ft
Percent Full	41.2	%
Critical Slope	0.00463	ft/ft
Velocity	3.41	ft/s
Velocity Head	0.18	ft
Specific Energy	0.39	ft
Froude Number	1.52	
Maximum Discharge	0.78	ft³/s
Discharge Full	0.73	ft³/s
Slope Full	0.00127	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	41.23	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - C1

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.21	ft
Critical Depth	0.26	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00463	ft/ft

Messages

Notes

Max Q from Pond #1 is 0.26 CFS per AHYMO.

Worksheet for Circular Pipe - C5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	8.00	in
Discharge	1.28	ft³/s

Results

Normal Depth	0.46	ft
Flow Area	0.26	ft²
Wetted Perimeter	1.30	ft
Hydraulic Radius	0.20	ft
Top Width	0.62	ft
Critical Depth	0.53	ft
Percent Full	68.6	%
Critical Slope	0.00691	ft/ft
Velocity	5.01	ft/s
Velocity Head	0.39	ft
Specific Energy	0.85	ft
Froude Number	1.38	
Maximum Discharge	1.69	ft³/s
Discharge Full	1.57	ft³/s
Slope Full	0.00664	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.62	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - C6+C5+D1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	12.00	in
Discharge	2.63	ft³/s

Results

Normal Depth	0.54	ft
Flow Area	0.43	ft²
Wetted Perimeter	1.65	ft
Hydraulic Radius	0.26	ft
Top Width	1.00	ft
Critical Depth	0.70	ft
Percent Full	54.0	%
Critical Slope	0.00468	ft/ft
Velocity	6.08	ft/s
Velocity Head	0.58	ft
Specific Energy	1.11	ft
Froude Number	1.63	
Maximum Discharge	4.98	ft³/s
Discharge Full	4.63	ft³/s
Slope Full	0.00322	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.96	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Pond 2 outlet

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01700	ft/ft
Diameter	18.00	in
Discharge	14.21	ft³/s

Results

Normal Depth	1.01	ft
Flow Area	1.27	ft²
Wetted Perimeter	2.89	ft
Hydraulic Radius	0.44	ft
Top Width	1.40	ft
Critical Depth	1.39	ft
Percent Full	67.5	%
Critical Slope	0.00938	ft/ft
Velocity	11.19	ft/s
Velocity Head	1.95	ft
Specific Energy	2.96	ft
Froude Number	2.07	
Maximum Discharge	19.15	ft³/s
Discharge Full	17.80	ft³/s
Slope Full	0.01083	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.54	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Pond 2 outlet

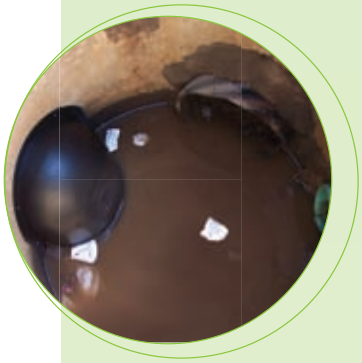
GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.01	ft
Critical Depth	1.39	ft
Channel Slope	0.01700	ft/ft
Critical Slope	0.00938	ft/ft

EnviroHood™

ADS®

ENVIROHOOD STRUCTURE



The Nyloplast® EnviroHood™ is an innovative stormwater management device attached to the inside of a catch basin or manhole designed to prevent the outflow of floating debris and oil.

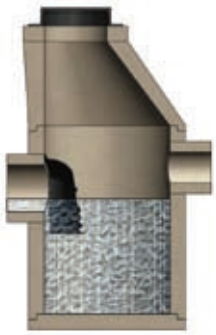
The need for cleaner stormwater has caused municipal leaders to demand forward-thinking solutions to improve their overall water quality. The EnviroHood offers lower installed costs and less intrusive installations than competitive devices.

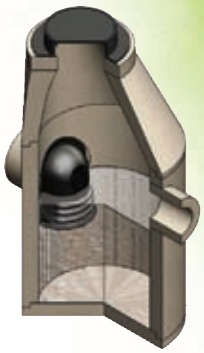
ENGINEERED FOR OPTIMAL PERFORMANCE

The innovative design incorporates the same proven corrugation technology used on ADS N-12® pipe products. This delivers maximum strength to weight ratio and ensures the structure is capable of supporting the hydraulic forces of a rainfall event.

FEATURES & BENEFITS:

- Molded from High Density Polyethylene (HDPE) for lightweight and sturdy design
- Corrugated design eliminates flat surfaces and provides increased structural capacity
- Effective low-cost solution for storm water treatment
- Easy to clean
- Highly corrosion-resistant for long service life





ADS Service: ADS representatives are committed to providing you with the answers to all your questions, including specifications, installation and more.

*The Most **Advanced** Name in Drainage Systems®*

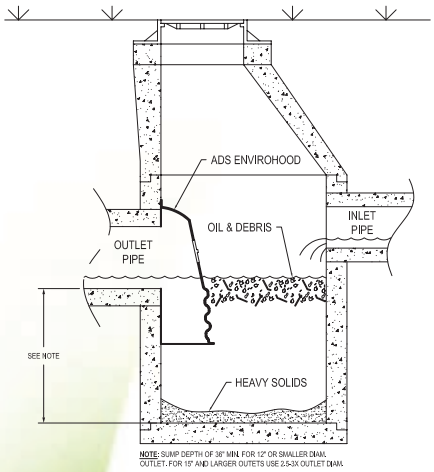
NYLOPLAST ENVIROHOOD SPECIFICATION

SCOPE

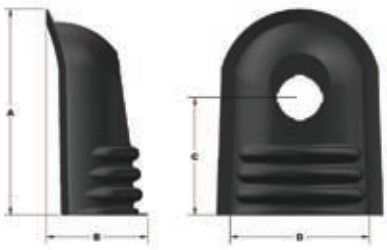
This specification describes the EnviroHood for use in stormwater conveyance systems.

REQUIREMENTS

- All hoods shall be constructed of polyethylene.
- The size and position of the hood shall be determined by the outlet pipe size as per manufacturer's recommendation.
- The bottom of the hood shall extend downward a minimum distance of 6" (15 cm) for pipes < 12" (30 cm).
- Installation hardware and instructions shall be provided by manufacturer.
- Installation shall be in accordance with Nyloplast installation procedures and those issues by local building/construction regulations.



TYPICAL INSTALLATION



STRUCTURE TYPE	OUTLET COVERED	PART NUMBER*	GENERAL DIMENSIONS in. (cm) A	B	C	D
48" (120 cm) Round Concrete	up to 18" (45 cm)	5818AGR	30.2 (75)	14.9 (35)	17.2 (45)	20.5 (50)
48"–54" (120–135 cm) Round Concrete	up to 24" (60 cm)	5824AGR	41.7 (105)	18.0 (45)	26.9 (70)	26.9 (70)
54"–60" (135–150 cm)Round Concrete	up to 30" (75 cm)	5830AGR	48.7 (120)	20.5 (50)	30.5 (75)	33.1 (85)
Flat Concrete	up to 18" (45 cm)	5818AGF	30.2 (75)	11.8 (30)	17.2 (45)	20.4 (50)
Flat Concrete	up to 24" (60 cm)	5824AGF	41.8 (105)	15.3 (40)	26.9 (70)	27.0 (70)
Flat Concrete	up to 30" (75 cm)	5830AGF	48.8 (120)	18.3 (45)	30.5 (75)	34.0 (85)
18" (45 cm) Nyloplast	up to 12" (30 cm)	5818AG0412	19.4 (50)	9.8 (25)	12.3 (30)	13.8 (35)
24" (60 cm)Nyloplast	up to 15" (40 cm)	5824AG0415	26.5 (65)	12.8 (30)	14.5 (35)	20.0 (50)
30"(75 cm) Nyloplast	up to 18" (45 cm)	5830AG0418	32.8 (85)	15.4 (40)	18.7 (45)	26.0 (65)

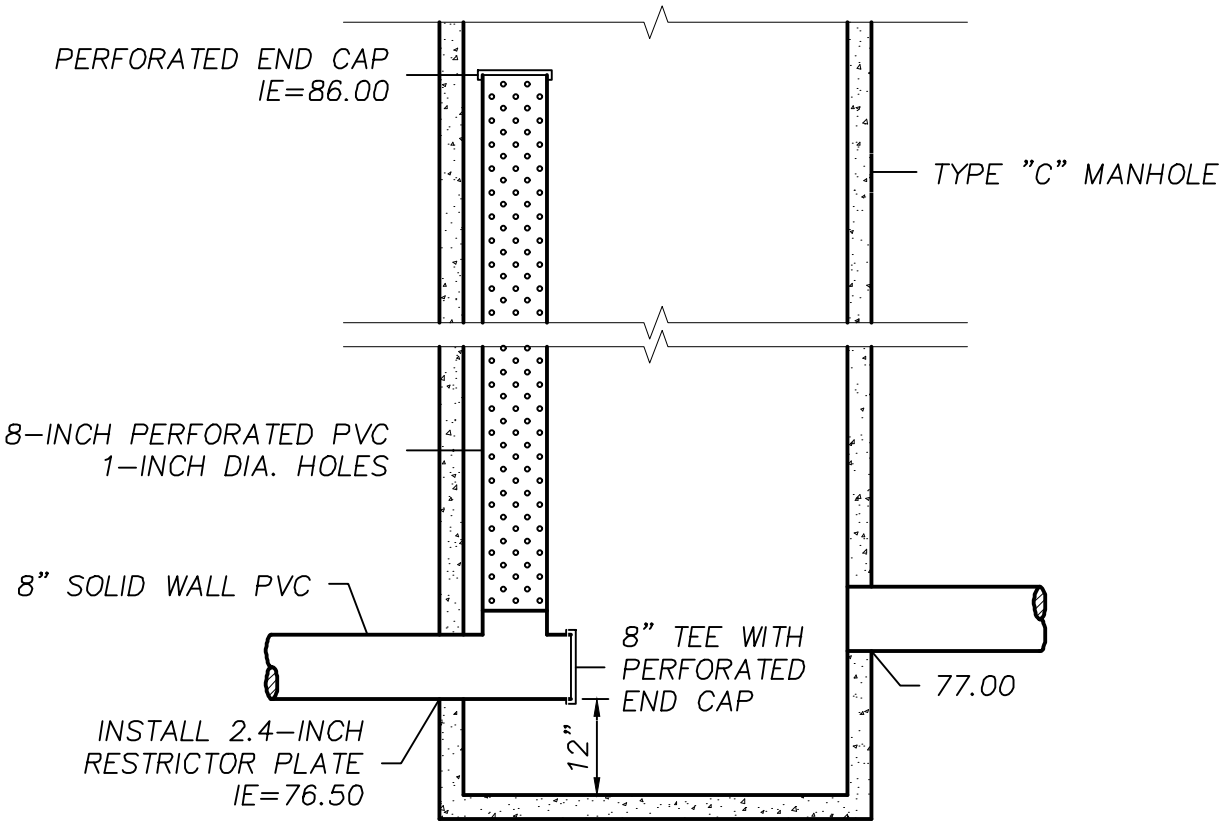
*Includes installation hardware

For more information on EnviroHood and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

BRO 10853 07/12

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

UNDERGROUND STORAGE OUTLET MANHOLE DETAIL



CAPACITY OF SINGLE 'C' STORM DROP INLETS

Capacity of the grate:

L = 47.375" - 2(6" $_{ends}$) - 14(½" $_{middle\ bars}$)
= 28.375"
= 2.365'

W = 30" - 13(½" $_{middle\ bars}$)
= 23.5"
= 1.958'

Area = 2.365' x 1.958'
= 4.63 ft^2

Effective Area = 4.63 – 4.63 (0.5 $_{clogging\ factor}$)
= 2.3 ft^2 at the grate

CHECK CAPACITY FOR MIN. H=0.10'

Orifice Equation
Q = CA sqrt(2gH)
Q = 0.6*2.3*sqrt(2*32.2*0.10)
Q = 3.50 cfs

Capacity of the throat:

L = 47-⅜"
= 3.948'

Weir Equation
Q = CLH^(3/2)
Q = 2.95 * 3.948 * 0.10^(3/2)
Q = 0.37 cfs

Total Capacity (FOR MIN. H=0.10'):

$Q = 3.50_{grate} + 0.37_{throat}$
Q = 3.87 cfs = Q $_{available}$

Curb Inlet Area "A1" Q $_{required}$ =1.57 cfs < Q $_{available}$, therefore **OK**.
Curb Inlet Area "A2" Q $_{required}$ =2.99 cfs < Q $_{available}$, therefore **OK**.
Curb Inlet Area "C6" Q $_{required}$ =1.35 cfs < Q $_{available}$, therefore **OK**.
Curb Inlet Area "D1" Q $_{required}$ =0.47 cfs < Q $_{available}$, therefore **OK**.

CAPACITY OF SINGLE 'D' STORM GRATED INLETS

Capacity of the grate:

L = 47.375" - 2(6" $_{ends}$) - 14(½" $_{middle\ bars}$)
= 28.375"
= 2.365'

W = 30" - 13(½" $_{middle\ bars}$)
= 23.5"
= 1.958'

Area = 2.365' x 1.958'
= 4.63 ft^2

Effective Area = 4.63 – 4.63 (0.5 $_{clogging\ factor}$)
= 2.3 ft^2 at the grate

CHECK CAPACITY FOR MIN. H=0.5'

Orifice Equation
Q = CA sqrt(2gH)
Q = 0.6*2.3*sqrt(2*32.2*0.50)
Q = 7.83 cfs

Grated Inlet Area "C4" $Q_{required}$ =1.99 cfs < $Q_{available}$, therefore **OK**.
Curb Inlet Area "C6" $Q_{required}$ =1.35 cfs < $Q_{available}$, therefore **OK**.